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GLOBAL DATA MONITORING REPORT

February, 1998

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1. Introduction

As the WMO-appointed lead centre for monitoring surface marine data, the U.K. Meteorological Office produces monthly statistics on the quality of these observations received at RSMC Bracknell. This report includes this information along with statistics for most other types of data. The figures and tables contained herein are presented according to the agreed standards for the exchange of monitoring results.

The report is based on data received at the UK Meteorological Office Headquarters, Bracknell in time for inclusion into the appropriate analysis. The evaluation of data quality is based on comparison with the appropriate 6-hour global model forecast (background field). Generally, the background field is of high quality except in data sparse areas, tropical regions and areas close to steep orography where care should be taken in interpreting the statistics shown.

Comments or queries on the report are welcome and should be addressed to:-

Dr. B. Macpherson
Head of Observation Processing and Monitoring Section
Data Assimilation
Meteorological Office
London Road
Bracknell
Berkshire
United Kingdom
RG12 2SZ

2 Global Data Monitoring Statistics

Ships, Fixed buoys, Platforms and Drifting buoys observations

TABLES 1-2 contain lists of the stations which are considered to have returned suspect observations of pressure, windspeed, wind direction or temperature, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 1 and 2 show 10 degree lat/long box average numbers of SHIP/SYNOP and DRIFTER observations received per day throughout the month at Bracknell and assimilated into model runs. Only data from the main hours of 00 UTC, 06 UTC, 12UTC and 18 UTC are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Synop Observations

Table 3 contains a list of stations which are considered to have returned suspect observations of Pressure during the month. The criteria for quality control are given in the header page. The reporting practice of each station is included in the list of statistics.

At RSMC Bracknell, for synoptic stations at or below a height of 500 metres, reported mean sea-level pressure is used in the statistics. If this is unavailable the mean sea-level pressure is calculated from the reported station-level pressure and temperature.

For synoptic stations above 500 metres, the mean sea-level pressure is calculated from the reported station-level pressure and temperature, or, if these are not available the height of a standard pressure-level (e.g.: 850 hPa or 700 hPa). If neither of these are available, the reported mean sea-level pressure is used.

Some stations vary their reporting practice according to the observation hour (e.g.: some stations in the CIS report both mean sea-level and station-level pressure at 00 & 12 UTC, but only mean sea-level pressure at 06 & 18 UTC). For monitoring purposes, reported mean sea-level pressure is stored separately from that calculated from station-level pressure or height of a standard pressure-level. Only statistics for the preferred method (see above) are presented in this report, and so for certain high-level stations, such as those from the CIS, approximately half of the number of observations actually received will appear in the statistics.

Aircraft observations

TABLE 4 contains a list of statistics calculated from data received from all airline carriers.

Figure 3 shows 10 degree lat/long box average numbers of aircraft reports (in AIREP/AMDAR code, including AIREPs, ACARs, AMDARs and ASDARs) received per day throughout the month at Bracknell and assimilated into model runs in the layer 70-500 hPa. Observations with a vector wind difference (compared with the model background field) of >60 m s^{-1} have been excluded. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Figures 4-7 show wind statistics for AIREP/ASDAR (in AIREP/AMDAR code, including AIREPs, ACARs, AMDARs and ASDARs) in the layer 70-500 hPa. Observations with a vector wind difference > 60 m s^{-1} have been excluded. Statistics have not been calculated for 10 degree lat/long boxes containing <31 observations.

Figure	Parameter
4	Mean wind vectors
5	Mean observation - background wind vector
6	Mean observation-background speed (m s^{-1})
7	RMS observation-background vector (m s^{-1})

Radiosonde Observations

TABLES 5-7 contain lists of the stations which are considered to have returned suspect observations of geopotential height, vector wind or wind direction, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 8 and 9 show 10 degree lat/long box average numbers of TEMP 500 hPa GEOPOTENTIAL HEIGHT and TEMP/PILOT 300 hPa WIND observations received per day throughout the month at Bracknell and assimilated into model runs. Data from all hours are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

APPENDIX I shows details of the gross error limits used in TABLES 5 and 6 and the weights used in the RMS values in TABLE 5.

Satellite Observations

Figures 10-24 show satellite wind statistics for all geostationary satellites. All plots other than **AVAILABILITY** show average data where there are > 10 observations in a 10 degree lat/long box.

Figure	Parameter Plotted	Layer (hPa)
10	Availability/average daily number	701-1000
11	Vector mean wind (observed)	701-1000
12	Observation-background vector wind difference	701-1000
13	Mean observation-background speed differences	701-1000
14	RMS observation-background vector difference	701-1000
15	Availability/average daily number	401-700
16	Vector mean wind (observed)	401-700
17	Observation-background vector wind difference	401-700
18	Mean observation-background speed differences	401-700
19	RMS observation-background vector difference	401-700
20	Availability/average daily number	101-400
21	Vector mean wind (observed)	101-400
22	Observation-background vector wind difference	101-400
23	Mean observation-background speed differences	101-400
24	RMS observation-background vector difference	101-400

Figures 25-27 show satellite mean observation-background temperature differences for NOAA-11 soundings at 500 km resolution and figures 28-30 show the same statistics for NOAA-14. Data are plotted where there are > 30 observations in a 10 degree lat/long box.

N.B. 500 km SATEMs are no longer assimilated into the UKMO global Unified Model. Both 500 km and 120 km SATEMs were replaced on 16th April 1996 by 120 km resolution temperature profiles produced locally from the radiances disseminated by NESDIS (from NOAA-11 and NOAA-14).

Figure	Layer (hPa)
25/28	850-1000
26/29	100-300
27/30	30-50

3 Composite Observing Systems for the North Atlantic (COSNA)

This section shows statistics for upper air (radiosonde and aircraft) and surface (drifter) data for the North Atlantic area for data received at Bracknell during the month.

TABLE 8 shows quality statistics for **Mean Sea-level Pressure, Windspeed and Wind Direction** received at Bracknell in DRIFTER code during the month for the area 10°N - 80°N, 85°W - 0°W.

TABLE 9 shows quality statistics for **Temperature and Vector Wind** received at Bracknell from aircraft during the month for the area 40°N - 70°N, 60°W - 0°W.

Table 10 - 13 show quality statistics **(Geopotential Height and Windspeed at 100 and 500 hPa)** for all TEMPSHIPS in the area bounded by 0°N - 90°N, 100°W - 40°E and selected TEMP stations within the same area.

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Revisions

1. May 95 Monitoring statistics for NOAA-11 removed. Figures 25-27 now show data for NOAA-12
2. May 95 Notes giving details of observations included in wind direction statistics clarified and corrected.
3. August 95 Monitoring statistics for NOAA-14 added with figures 28-30.
4. February 96 Monitoring statistics for GOES-7 have been replaced by statistics for GOES-8 and GOES-9.
5. February 97 Monitoring statistics for Meteosat 5 have been replaced by statistics for Meteosat 6.
6. Sept 97 Monitoring statistics for NOAA-12 removed. Figures 25-27 now show data for NOAA-11

TABLE 1

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SHIPS, FIXED BUOYS AND PLATFORMS
MONITORING CENTRE: BRACKNELL
MONTH: February, 1998

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for ships, fixed buoys and platforms.
Standard of comparison		:Background field from Bracknell global model.
Observation times		:00, 06, 12, 18 UTC
Elements monitored		:Mean sea level pressure (hPa). :Wind speed ($m\ s^{-1}$). :Wind direction (Degrees).
Parameters monitored		
	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors. **N.B. a positive bias indicates the observation is veered to the background.**
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT :15 hPa (pressure)
:25 $m\ s^{-1}$ (vector wind)

SELECTION CRITERIA	:NOBS	> 20 , and one or more of the following:	
	1.| bias|	> 4 hPa	(pressure),
		> 5 $m\ s^{-1}$	(wind speed),
		> 30 degrees	(direction).
	2.SD	> 6 hPa	(pressure),
		> 80 degrees	(direction).
	3.PGE	> 25	

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 $m\ s^{-1}$

IDENTIFIER	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE									
C6IM2	ALL	P	SUR	22	0	0	1.8	4.9	5.2
DUWH	ALL	P	SUR	136	3	2	1.9	-4.5	4.9
ELTE6	ALL	P	SUR	91	0	0	1.1	-4.3	4.5
EUAF	ALL	P	SUR	24	2	8	1.1	11.7	11.7
LAFQ5	ALL	P	SUR	23	6	26	1.2	-1.1	1.7
MVQN8	ALL	P	SUR	38	2	5	0.8	12.9	13.0
UAMY	ALL	P	SUR	26	15	58	4.1	-4.2	5.9
UCOQ	ALL	P	SUR	28	7	25	1.9	-1.4	2.4
UDYN	ALL	P	SUR	34	6	18	4.5	4.1	6.1
UFYN	ALL	P	SUR	31	0	0	1.6	-4.0	4.3
VRUS7	ALL	P	SUR	20	0	0	1.6	6.4	6.6
V2XO	ALL	P	SUR	20	0	0	1.9	-7.1	7.4
V7AS7	ALL	P	SUR	25	4	16	1.1	11.4	11.4
V7AW8	ALL	P	SUR	39	0	0	1.6	4.8	5.0
WDZB	ALL	P	SUR	60	0	0	1.8	-5.2	5.6
3EUY3	ALL	P	SUR	36	1	3	6.2	5.3	8.2
3FDY6	ALL	P	SUR	23	0	0	2.2	6.4	6.7
3FGN3	ALL	P	SUR	28	2	7	1.1	-6.1	6.2
3FMP6	ALL	P	SUR	33	0	0	2.9	-4.2	5.1
3FUD4	ALL	P	SUR	33	0	0	1.3	-4.7	4.9
3FXA4	ALL	P	SUR	54	0	0	1.9	5.1	5.5
9VIH	ALL	P	SUR	30	0	0	1.8	-5.9	6.2
9VPK	ALL	P	SUR	31	0	0	1.6	8.9	9.0
WIND SPEED									
C6KX9	ALL	SPEED	SUR	65	0	0	7.4	8.2	11.0
C6YC	ALL	SPEED	SUR	26	2	8	4.1	5.2	6.6
DUQM	ALL	SPEED	SUR	41	1	2	6.5	8.3	10.6
DUXW	ALL	SPEED	SUR	38	2	5	5.7	10.1	11.6
ELQB8	ALL	SPEED	SUR	22	0	0	3.4	5.4	6.4
ELQX8	ALL	SPEED	SUR	36	0	0	4.2	13.7	14.3
GXOF	ALL	SPEED	SUR	36	0	0	3.2	11.3	11.7
JCUH	ALL	SPEED	SUR	41	0	0	3.6	5.0	6.1
JFOY	ALL	SPEED	SUR	29	0	0	2.8	5.0	5.7
J8CV5	ALL	SPEED	SUR	82	0	0	4.3	7.9	9.0
LACG4	ALL	SPEED	SUR	68	0	0	4.1	5.6	6.9
OUSE6	ALL	SPEED	SUR	50	0	0	4.6	5.9	7.5
OXRA6	ALL	SPEED	SUR	49	0	0	3.8	6.6	7.6
OZIA	ALL	SPEED	SUR	176	1	1	4.3	5.7	7.1
PDMQ	ALL	SPEED	SUR	22	0	0	4.5	6.3	7.7
PFCZ	ALL	SPEED	SUR	21	0	0	2.9	5.9	6.6
PJOX	ALL	SPEED	SUR	37	0	0	5.1	5.9	7.8
SBPO	ALL	SPEED	SUR	83	1	1	3.6	5.3	6.3
VROB	ALL	SPEED	SUR	34	1	3	8.5	6.8	10.8
VRUZ202	ALL	SPEED	SUR	29	1	3	4.8	5.4	7.2
3EBW4	ALL	SPEED	SUR	29	0	0	3.9	5.6	6.8
3EUY3	ALL	SPEED	SUR	52	0	0	2.8	7.1	7.6
3FLU7	ALL	SPEED	SUR	22	8	36	6.2	4.2	7.5
3FTR6	ALL	SPEED	SUR	100	0	0	4.3	5.1	6.7
63104	ALL	SPEED	SUR	32	24	75	3.0	-4.3	5.3
8POB	ALL	SPEED	SUR	21	0	0	1.4	5.0	5.1
9VOS	ALL	SPEED	SUR	28	0	0	3.9	-8.3	9.2
WIND DIRECTION									
C6T2064	ALL	DIRN.	SUR	20	0	0	34.7	-42.2	54.7
46060	ALL	DIRN.	SUR	540	0	0	27.1	-30.5	40.8
51304	ALL	DIRN.	SUR	33	0	0	35.3	-46.4	58.3
62107	ALL	DIRN.	SUR	459	10	2	84.7	-25.7	88.5
62120	ALL	DIRN.	SUR	29	0	0	119.5	-12.6	120.1
63104	ALL	DIRN.	SUR	32	24	75	7.9	111.3	111.5

AVAILABILITY – SHIP/SYNOP – FEBRUARY 1998

FIGURE 1

MAIN HOURS ONLY

10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS =   19594

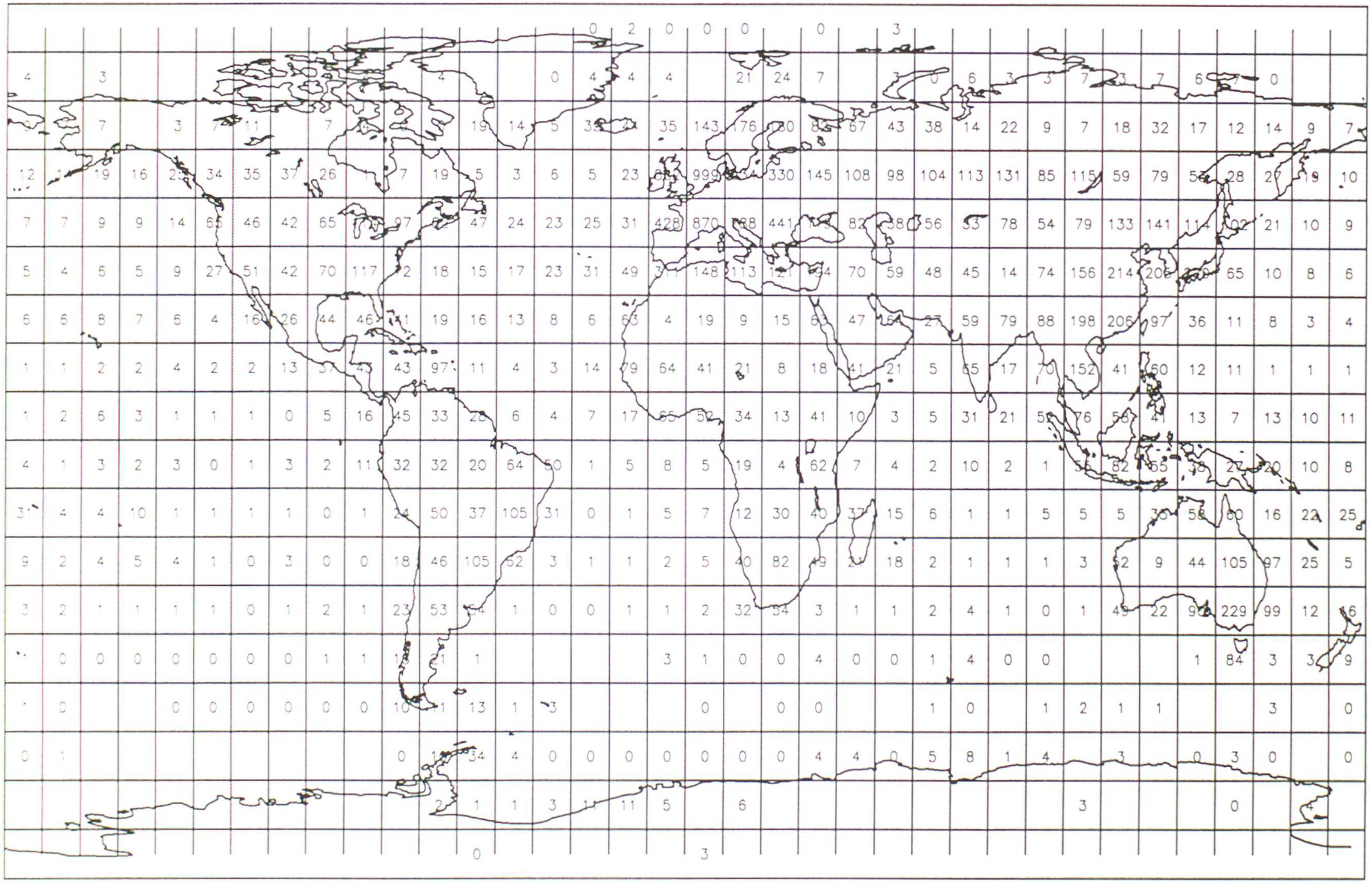


TABLE 2

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - DRIFTING BUOYS
MONITORING CENTRE: BRACKNELL
MONTH: February, 1998

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for drifting buoys.

Standard of comparison :Background field from Bracknell global model.

Position :Average latitude and longitude for period.

Observation times :00, 06, 12, 18 UTC

Elements monitored
:Mean sea level pressure (hPa).
:Wind speed ($m\ s^{-1}$).
:Wind direction (degrees).

Parameters monitored

:NOBS :Number of observations received excluding duplicates.

:NGE :Number of observations with gross errors.

:PGE :Percentage of observations with gross errors.

:SD :SD of difference of observations from background values excluding those with gross errors.

:BIAS :Mean difference of observations from background values excluding those with gross errors.
N.B. a positive bias indicates the observation is veered to the background.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT
:15 hPa (pressure)
:25 $m\ s^{-1}$ (vector wind)

SELECTION CRITERIA : NOBS > 20 , and one or more of the following:

1.| bias|
> 4 hPa (pressure),
> 5 $m\ s^{-1}$ (wind speed),
> 30 degrees (direction).

2.SD
> 6 hPa (pressure),
> 80 degrees (direction).

3.PGE > 25.

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 $m\ s^{-1}$

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
31527	-42.7	-24.7	ALL	P	SUR	77	12	16	7.8	1.1	7.9
31530	-36.1	-25.3	ALL	P	SUR	73	73	100	0.0	0.0	0.0
33505	-45.4	-27.6	ALL	P	SUR	100	86	86	4.6	-9.2	10.3
33574	-39.1	-18.7	ALL	P	SUR	163	0	0	2.6	4.8	5.4
44728	63.7	-26.5	ALL	P	SUR	1025	369	36	1.6	0.2	1.6
46905	38.2	-129.2	ALL	P	SUR	402	148	37	6.2	1.9	6.5
51682	-17.3	-143.4	ALL	P	SUR	396	181	46	1.5	-0.4	1.5
62927	57.4	-8.0	ALL	P	SUR	76	20	26	2.2	-0.1	2.2
63665	84.8	17.6	ALL	P	SUR	261	103	39	4.5	0.4	4.5
WIND SPEED											
21531	32.9	177.8	ALL	SPEED	SUR	299	1	0	2.5	-5.2	5.7
52657	26.4	127.8	ALL	SPEED	SUR	160	0	0	1.7	-5.7	6.0
62697	51.4	-15.3	ALL	SPEED	SUR	585	0	0	3.3	-8.2	8.8
62803	66.4	120.3	ALL	SPEED	SUR	696	1	0	3.4	-8.1	8.8
WIND DIRECTION											
52540	13.4	144.7	ALL	DIRN.	SUR	158	0	0	13.8	85.7	86.8
52657	26.4	127.8	ALL	DIRN.	SUR	85	0	0	89.6	23.3	92.6

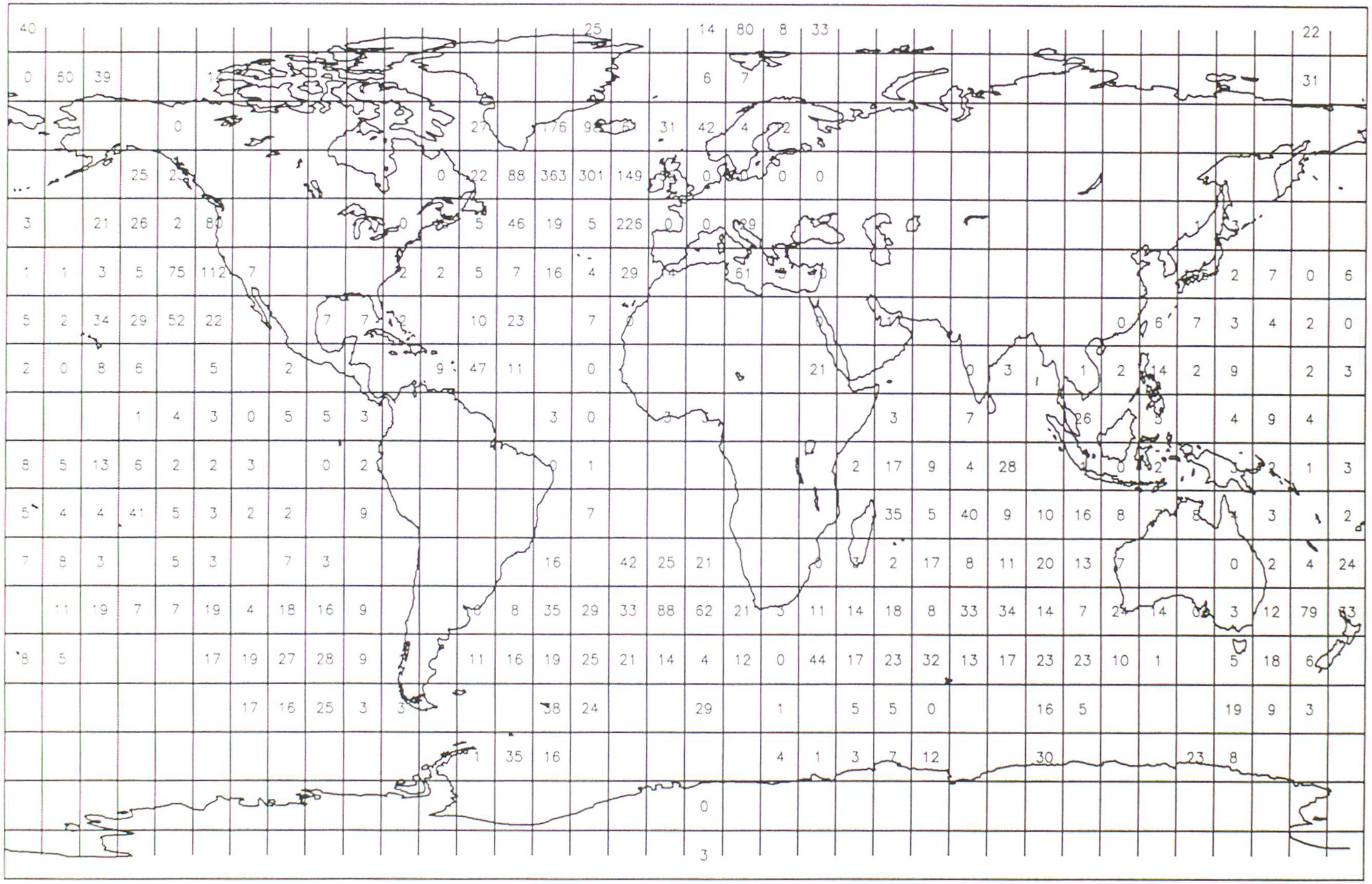
AVAILABILITY – DRIFTER – FEBRUARY 1998

MAIN HOURS ONLY

10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 5541

FIGURE 2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0 60 39 1 6 7 31
0 27 176 93 31 42 4 2
25 2 0 22 88 363 301 149 0 0 0
3 21 26 2 80 0 5 46 19 5 226 0 0 89
1 1 3 5 75 112 7 2 2 5 7 16 4 29 61 2 7 0 6
5 2 34 29 52 22 7 7 2 10 23 7 0 6 7 3 4 2 0
2 0 8 6 5 2 9 47 11 0 21 0 3 1 2 14 2 9 2 3
1 4 3 0 5 5 3 3 0 3 3 3 7 26 3 4 9 4
8 5 13 6 2 2 3 0 2 0 1 2 17 9 4 28 0 2 1 3
5 4 4 41 5 3 2 2 9 7 35 5 40 9 10 16 8 7 8 4 3 2
7 8 3 5 3 7 3 16 42 25 21 0 3 2 17 8 11 20 13 7 0 2 4 24
11 19 7 7 19 4 18 16 9 8 8 35 29 33 88 62 21 3 11 14 18 8 33 34 14 7 24 14 0 3 12 79 33
8 5 17 19 27 28 9 11 16 19 25 21 14 4 12 0 44 17 23 32 13 17 23 23 10 1 5 18 6
17 16 25 3 3 38 24 29 1 5 5 0 16 5 19 9 3
1 35 16 4 1 3 7 12 30 23 8
0
3

TABLE 3

MONITORING OF LAND SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SYNOPS & AUTOSYNOPS
MONITORING CENTRE: BRACKNELL
MONTH: February, 1998

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for synops & autosynops.
Standard of comparison		:Background field from Bracknell global model.
Observation times		:00, 06, 12, 18 UTC
Elements monitored		:Mean sea level pressure (hPa).
Parameters monitored	:HT(m)	:Station height (in metres) as given in WMO No. 9 Vol A
	:RP	:Pressure reporting practice M=mean sea level pressure (hPa) reported. S=Station level pressure reported. 8=Geopotential height (m) of 850 hPa surface reported. 7=Geopotential height (m) of 700 hPa surface reported.
	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:%REJ	:Percentage of observations flagged.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.
GROSS ERROR LIMIT	:15 hPa	(pressure)
SELECTION CRITERIA	:NOBS	> 20 ,and one or more of the following:
	1.| bias|	> 4 hPa
	2. SD	> 6 hPa
	3.PGE	> 25.

N.B. For stn ht > 500m, mslp is that calculated from station level pressure where available.
For stn ht < 500m, mslp is that as reported by the station where available.

WMO REGION 1:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
60445	36.2N	5.4E	1081	S8	89	0	0	1	0.9	4.6	4.7
60468	35.6N	6.2E	1052	S8	84	84	100	0	0.0	0.0	0.0
60511	35.3N	1.4E	1127	S8	85	80	94	0	0.4	14.4	14.4
60535	34.7N	3.3E	1144	S8	65	0	0	0	0.7	-6.5	6.5
60571	31.6N	2.2W	773	S8	91	0	0	0	0.9	-4.2	4.3
60670	24.6N	9.5E	1054	S8	92	2	2	3	1.4	7.8	7.9
63330	13.5N	39.5E	2070	MS	41	41	100	37	0.0	0.0	0.0
63333	11.1N	39.7E	1903	MS	42	0	0	0	0.9	4.4	4.5
63334	10.3N	37.7E	2515	MS	47	1	2	38	1.2	8.9	9.0
63402	7.7N	36.8E	1725	MS	40	0	0	38	2.0	5.7	6.0
63471	9.6N	41.9E	1260	MS	49	1	2	37	0.8	10.1	10.1
63478	5.9N	43.6E	295	MS	36	2	6	8	2.0	7.1	7.4
68297	25.5S	31.9E	183	S8	74	0	0	82	2.9	-5.8	6.5
68396	26.5S	31.3E	641	S8	43	0	0	0	0.9	4.9	5.0
68442	29.1S	26.3E	1359	S8	92	0	0	0	1.1	-4.3	4.4
69679	43.9N	18.3E	1557	MS	77	77	100	0	0.0	0.0	0.0

WMO REGION 2:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
24671	63.9N	135.9E	402	MS	93	1	1	3	3.3	8.2	8.8
24688	63.3N	143.2E	741	MS	94	20	21	45	5.2	4.6	6.9
25621	64.0N	158.9E	683	MS	95	4	4	34	4.8	4.5	6.6
30320	56.9N	105.7E	669	MS	97	51	53	0	1.7	0.2	1.7
30554	54.5N	113.6E	995	MS	99	1	1	36	4.2	6.6	7.8
31088	59.4N	143.2E	6	MS	98	0	0	20	1.3	-4.5	4.7
31123	57.8N	130.9E	255	MS	50	0	0	8	2.3	4.3	4.9
31168	56.4N	138.2E	8	MS	99	0	0	2	1.7	-4.2	4.5
40743	36.2N	57.7E	941	MS	100	0	0	0	1.2	-4.7	4.9
40762	35.3N	59.2E	1333	MS	100	4	4	0	1.1	-12.7	12.7
41254	23.1N	57.7E	1755	S8	65	65	100	0	0.0	0.0	0.0
41396	16.0N	48.9E	700	MS	21	1	5	10	2.5	6.0	6.5
41466	13.7N	44.1E	1402	8	26	0	0	0	1.0	-5.9	6.0
44212	50.0N	92.1E	940	M	97	4	4	4	2.5	4.7	5.3
44416	28.6N	81.6E	720	MS	69	3	4	0	1.5	4.5	4.7
44477	27.0N	87.4E	1445	S8	63	63	100	0	0.0	0.0	0.0
51334	44.6N	82.9E	321	M	99	0	0	0	2.9	6.8	7.4
51379	44.0N	89.6E	794	M	100	0	0	35	2.3	6.3	6.7
51818	37.6N	78.3E	1376	M	99	0	0	0	2.5	4.6	5.2
52602	38.8N	93.4E	2734	S	99	0	0	0	1.4	-5.7	5.9
52866	36.6N	101.8E	2262	S	100	0	0	0	1.1	-4.6	4.7
53083	44.6N	114.2E	1183	M	100	0	0	67	2.0	4.4	4.8
53352	41.7N	110.4E	1377	M	99	0	0	52	2.4	5.0	5.5
53480	41.0N	113.1E	1416	M	100	0	0	39	2.7	4.5	5.2
53588	39.0N	113.5E	2898	S	100	0	0	63	1.8	-4.1	4.5
54386	41.4N	128.2E	1018	M	99	0	0	3	2.7	5.6	6.2
54587	39.1N	123.2E	-125	M	79	0	0	1	1.1	-4.8	4.9
54826	36.3N	117.1E	1536	S	99	0	0	42	2.1	-4.2	4.7
56144	31.8N	98.6E	3184	S	87	0	0	0	1.1	-4.6	4.7
56385	29.5N	103.3E	3049	S	99	0	0	8	2.2	-7.4	7.7
56444	28.5N	98.9E	3488	S	98	10	10	0	0.7	13.7	13.7
56462	29.0N	101.5E	2994	S	93	1	1	0	1.5	7.6	7.7
58437	30.1N	118.2E	1836	S	100	0	0	47	2.0	-4.3	4.7
58445	30.3N	119.4E	1494	S	100	0	0	24	1.9	-5.6	5.9

WMO REGION 3:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
80099	7.1N	70.7W	128	MS	25	0	0	8	1.8	-5.8	6.1
83214	10.3S	54.9W	285	MS	48	0	0	2	2.2	-6.0	6.4
83319	14.7S	52.4W	315	MS	67	0	0	0	1.1	-4.3	4.4
83344	15.0S	40.9W	840	MS	62	0	0	100	0.7	-8.4	8.4
83423	16.7S	49.3W	741	MS	74	0	0	0	1.0	-4.3	4.4
83488	17.8S	42.9W	1097	MS	72	72	100	0	0.0	0.0	0.0
83587	19.9S	43.9W	850	MS	71	0	0	1	1.1	-7.1	7.2
83704	22.3S	53.9W	369	MS	51	0	0	0	4.5	-5.7	7.3
83773	23.1S	48.9W	793	S	22	0	0	0	1.3	-5.9	6.0
83836	25.5S	50.6W	837	MS	72	1	1	0	0.8	-4.0	4.1
84401	5.2S	80.6W	49	MS	67	0	0	0	1.5	4.3	4.6
84455	6.5S	76.4W	281	MS	53	1	2	0	1.8	6.8	7.0
84472	7.1S	78.5W	2620	S	33	0	0	6	2.0	-6.6	6.9
84542	9.4S	77.6W	2750	S	29	1	3	0	1.2	4.5	4.7
84782	18.1S	70.3W	468	MS	73	0	0	0	1.6	7.0	7.2
85242	18.0S	67.1W	3072	S	38	38	100	63	0.0	0.0	0.0
85312	19.8S	63.9W	992	S	30	1	3	0	1.9	-10.4	10.6
85406	18.3S	70.3W	55	M	95	0	0	0	1.3	4.8	5.0

WMO REGION 4:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
71094	66.6N	61.6W	393	MS	98	0	0	0	1.4	-4.2	4.4
72476	39.1N	108.5W	1481	MS	103	0	0	0	1.1	4.0	4.1
72576	42.8N	108.7W	1703	MS	103	0	0	0	0.9	4.6	4.7
76539	22.1N	101.0W	1870	MS	48	0	0	2	1.3	-4.0	4.2
76698	19.6N	88.0W	20	MS	42	1	2	40	1.1	-4.1	4.2
76750	18.5N	88.3W	9	MS	42	0	0	0	1.1	-4.1	4.2
76762	17.5N	99.5W	1865	MS	27	27	100	0	0.0	0.0	0.0
76775	17.1N	96.7W	1550	MS	24	0	0	0	1.2	4.8	4.9
76845	16.7N	92.6W	2276	MS	37	37	100	0	0.0	0.0	0.0

WMO REGION 5:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
94328	22.4S	133.6E	623	MS	78	0	0	0	0.9	6.4	6.5
94955	41.6S	145.7E	684	MS	95	95	100	0	0.0	0.0	0.0
95952	41.9S	145.6E	560	MS	101	101	100	0	0.0	0.0	0.0

WMO REGION 6:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
02045	67.8N	20.4E	408	M	52	52	100	0	0.0	0.0	0.0
02801	69.1N	20.8E	478	M	77	0	0	45	3.3	4.2	5.3
03410	52.8N	3.5W	360	M	292	53	18	18	6.0	-4.9	7.7
04201	77.5N	63.2W	16	MS	295	0	0	3	2.2	5.2	5.6
04207	81.7N	59.9W	105	MS	92	1	1	3	2.0	-4.5	4.9
04416	72.6N	38.4W	3202	S	83	77	93	0	4.6	9.8	10.8
06672	46.9N	8.6E	449	MS	311	0	0	14	1.9	4.6	5.0
06712	46.3N	6.9E	381	MS	311	0	0	0	1.9	4.2	4.6
06720	46.2N	7.3E	482	MS	311	0	0	10	2.4	5.0	5.5
06756	46.5N	8.9E	575	MS	311	0	0	0	1.6	4.2	4.5
06990	47.1N	9.5E	460	MS	311	0	0	0	2.0	4.0	4.5
10427	51.2N	8.5E	839	S8	302	0	0	26	1.0	-4.6	4.7
10453	51.8N	10.6E	1142	S8	309	0	0	29	1.4	-4.8	5.0
11105	47.3N	9.6E	439	MS	97	0	0	4	2.0	4.5	4.9
11130	47.6N	12.2E	495	MS	100	0	0	3	2.0	4.6	5.0

WMO REGION 6:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
11146	47.1N	13.0E	3105	S7	74	0	0	92	1.1	-4.5	4.6
11180	47.7N	15.8E	1546	S8	92	0	0	8	1.3	-4.6	4.8
11302	47.4N	9.7E	410	MS	99	0	0	1	1.6	4.0	4.3
11916	49.0N	19.6E	2005	S8	100	0	0	89	1.8	-5.0	5.3
11930	49.2N	20.2E	2633	S7	100	0	0	70	1.6	-4.5	4.8
12510	50.7N	15.7E	1603	8	95	0	0	93	1.8	-5.3	5.6
13289	44.1N	21.9E	1037	8	99	2	2	82	2.0	-4.0	4.5
15280	45.4N	25.4E	2504	S	96	2	2	82	2.1	-5.0	5.4
15627	42.7N	24.8E	2384	S7	99	2	2	58	3.0	-4.0	5.0
16134	44.2N	10.7E	2165	S8	93	3	3	80	1.7	-4.4	4.7
16227	41.9N	13.6E	655	MS	286	260	91	0	1.8	-13.0	13.1
16549	39.1N	8.3E	12	MS	247	0	0	0	1.1	-5.1	5.2
16614	40.4N	21.3E	604	MS	83	0	0	0	0.9	-6.0	6.1
17203	38.9N	40.5E	1177	S8	58	0	0	29	1.7	5.7	5.9

ANTARCTIC:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
89004	71.7S	2.8W	815	M	256	76	30	0	2.9	9.1	9.6
89264	71.4S	68.9W	780	S	177	0	0	0	2.1	4.5	5.0
89345	89.7S	148.8W	620	S	322	46	14	0	3.1	-8.9	9.4

TABLE 4

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: February, 1998

Monitoring procedures		
Period		:One calendar month.
Data monitored		:Statistics for each airline carrier.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from Bracknell global model.
Observation times		:All hours combined.
Level(s) monitored		:70.0 - 500.0 hPa
Elements monitored		:TEMP in °C ; WIND in m s^{-1}
Parameters monitored		
	:N REP.	:Number of observations received excluding duplicates.
	:PG	:Percentage of observations with gross errors.
	:PR	:Percentage of observations rejected by quality control including rejections from the duplicate check.
	:PC	:Percentage of observations with calm winds.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors in Temperature & Wind Speed.
GROSS ERROR LIMITS		:10.0 °C ; 60 m s^{-1} Vector Wind
SELECTION CRITERIA		:N REP $\geq$ 20

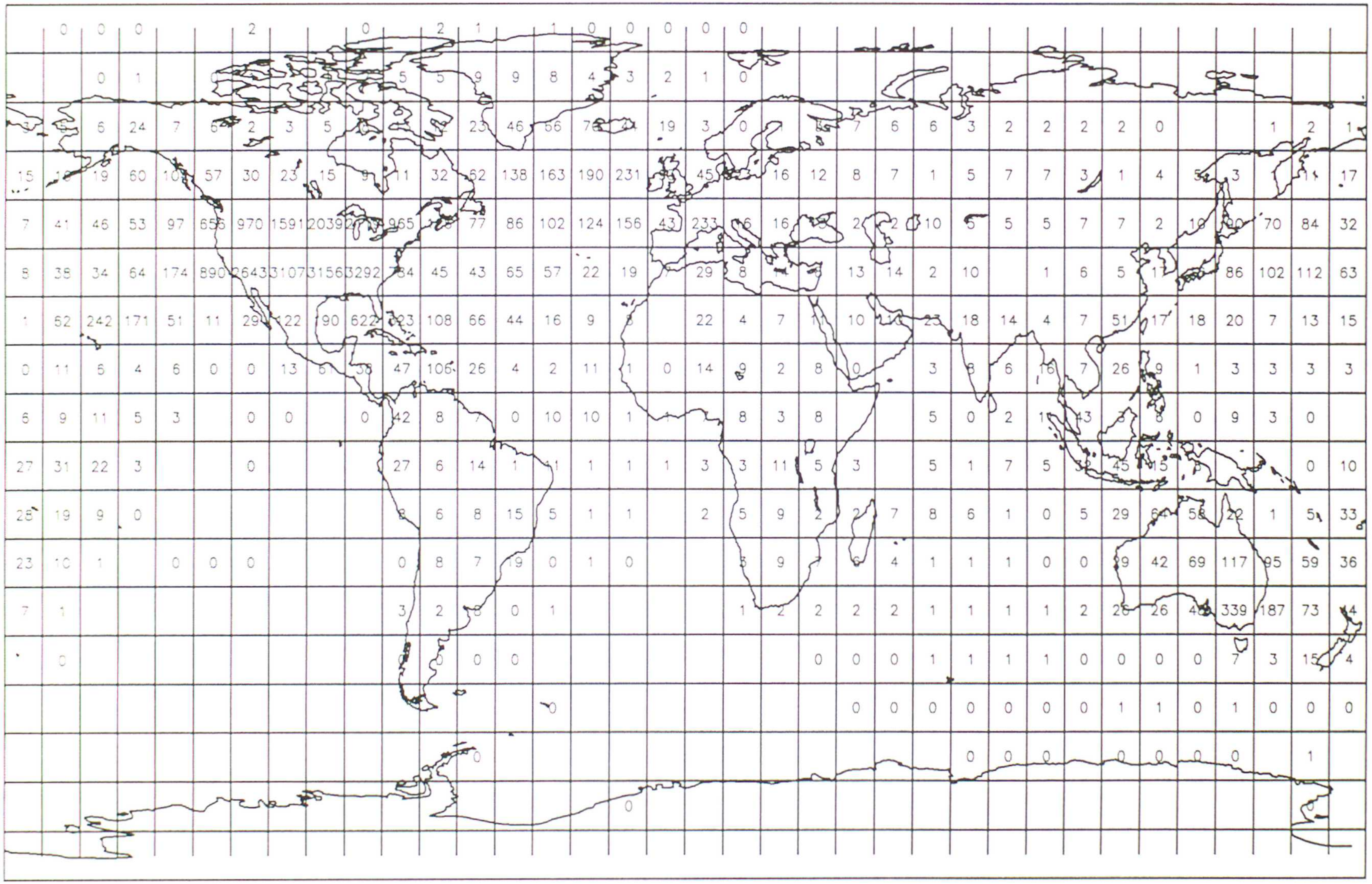
NB: US ACARs and ADS data are shown at the bottom of the table as US ACAR and ADS respectively.

		TEMPERATURE					WIND				
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAA	125	1	19	1.7	0.8	241	0	50	0	7.0	0.8
AAL	5350	1	27	1.8	0.1	9429	0	12	0	9.5	0.5
AAR	1378	1	7	2.1	-0.4	2714	0	4	0	10.0	0.5
ACA	1565	1	8	1.9	-0.1	2982	0	2	0	7.4	0.4
ACI	41	5	15	2.2	0.2	79	0	3	0	6.8	0.1
AEA	531	2	49	2.7	1.2	937	0	8	0	10.6	0.6
AEL	778	2	6	1.6	-0.4	1515	0	3	0	9.8	0.4
AEY	171	4	5	1.8	0.7	337	0	1	0	8.9	0.5
AFL	403	0	4	2.1	0.3	760	0	2	0	9.2	0.6
AFR	2043	3	16	1.7	0.1	3730	0	7	0	8.9	0.6
AIH	243	8	14	1.9	0.0	381	0	2	0	9.6	0.3
AJM	55	9	18	1.5	-0.1	88	0	6	0	14.2	1.0
AMT	574	9	100	2.6	1.2	1105	0	23	0	8.5	0.5
AMX	267	0	6	2.1	-0.1	525	0	4	0	10.0	1.1
ANA	1023	0	12	1.8	-0.3	2034	0	6	0	8.6	0.7
ANZ	2689	3	29	1.7	0.0	5164	0	14	0	8.0	0.4
AOM	851	3	10	1.9	0.9	1509	0	4	0	9.1	0.4
ARG	28	7	46	4.8	2.3	63	2	29	0	27.4	-6.0
ASY	26	0	35	2.1	0.9	50	0	20	0	10.9	-1.5
AUA	39	3	28	2.3	-0.6	57	0	5	0	6.8	0.3
AVA	374	1	5	1.9	-0.2	740	0	3	0	10.1	0.6
AVN	42	5	7	1.5	0.0	80	0	1	0	10.2	0.0
AXA	100	3	32	1.3	0.3	192	0	15	0	8.5	0.8
AZA	458	4	27	2.1	0.0	696	0	8	0	10.1	0.8
BAL	681	3	16	1.7	-0.3	1303	0	8	0	9.3	0.3
BAW	1434	3	21	1.9	-0.2	2474	0	8	0	7.7	0.6
BBB	113	2	16	2.3	-0.4	185	0	4	0	11.0	0.7
BWA	358	1	38	2.2	1.1	622	0	6	0	11.0	0.5
CAL	1431	1	8	2.1	-0.4	2843	0	5	0	10.6	0.3
CCA	177	6	20	3.2	0.4	318	1	22	0	14.1	0.6
CDN	2054	1	10	1.9	0.3	4048	0	5	0	8.3	0.5
CES	291	1	6	1.9	0.2	570	0	3	0	10.6	0.6
CFC	22	0	0	2.3	-0.5	42	0	2	0	9.7	-0.8
CFG	1179	1	7	2.0	-0.7	2283	0	3	0	9.8	0.2
CKS	446	2	100	2.3	0.7	764	0	20	0	11.0	0.4
CKT	178	2	15	1.8	0.4	319	0	5	0	9.8	0.8
CLX	301	0	4	2.0	-0.8	567	0	2	0	8.6	0.2
CMI	533	0	6	1.8	0.8	1074	0	3	0	8.5	0.3
CMM	687	3	18	1.9	0.0	1281	0	8	0	10.7	0.7
COA	1624	1	37	1.9	0.4	2886	0	18	0	11.0	0.8
CPA	85	2	2	1.6	-0.4	163	0	1	0	8.7	0.1
CRL	733	2	8	1.6	0.2	1365	0	3	0	9.3	0.5
CSN	94	3	17	2.6	-0.4	184	1	9	0	11.9	1.4
CTB	197	3	8	1.6	0.1	378	0	2	0	10.2	0.2
CTM	136	1	24	2.4	-1.3	252	0	12	0	10.0	0.5
CUB	498	2	9	2.6	1.4	921	0	50	0	11.2	0.6
DAL	5181	1	35	2.5	0.8	9184	0	15	0	9.1	0.5
DBY	171	0	1	1.4	-0.5	336	0	1	0	8.9	0.1
DHL	107	4	34	4.2	-2.7	173	1	6	0	9.2	0.7
DLH	2439	2	19	1.9	-0.1	4311	0	7	0	8.3	0.6
DOA	46	0	0	1.5	0.1	84	0	0	0	9.4	-0.1
EIA	258	2	35	1.4	0.3	509	0	18	0	8.9	0.8
ELY	122	2	10	1.7	-0.2	245	0	5	0	10.8	0.7
EVA	1588	1	10	2.0	-0.4	3155	0	5	0	10.0	0.4
EWW	92	3	15	2.8	1.6	163	0	4	0	10.8	-0.1
FDX	891	1	19	1.7	0.6	1784	0	9	0	8.4	0.5
FFF	58	0	3	1.3	0.8	95	22	61	0	39.5	-0.8
FIN	224	0	16	2.3	0.6	384	0	4	0	8.0	0.2

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
FJI	373	6	25	1.7	0.6	698	0	10	0	8.0	0.3
FOM	137	4	39	1.6	0.5	266	0	18	0	8.4	1.0
GCO	65	0	23	2.4	1.9	130	2	13	1	6.8	0.5
GHA	32	31	31	1.6	0.8	38	0	0	0	8.4	1.7
GIA	222	3	34	1.6	0.5	406	0	16	0	7.7	0.8
HAL	2751	1	37	1.8	0.3	5417	0	19	0	11.3	0.2
HLF	177	1	18	1.9	-0.6	306	0	6	0	8.9	0.8
HLQ	50	0	24	1.7	0.6	101	0	11	0	6.6	0.5
HRH	70	19	66	1.1	0.6	114	0	29	0	4.9	0.1
IBE	1886	3	22	2.2	0.7	3414	0	8	0	10.0	0.6
ICE	525	1	27	2.1	-0.1	843	0	8	0	7.9	0.5
JAL	5418	0	6	1.9	0.1	10800	0	4	0	9.1	0.6
JAZ	45	0	11	1.6	1.2	89	0	7	0	7.3	0.4
KAL	2693	1	9	2.0	-0.4	5275	0	5	0	9.7	0.4
KLM	2649	1	14	1.8	0.0	4882	0	5	0	8.3	0.5
LAN	43	5	19	3.4	-0.2	87	0	6	0	10.2	0.2
LAP	38	24	66	6.1	4.7	74	3	32	0	38.2	-12.1
LDA	357	1	16	1.8	-1.0	659	1	8	0	9.7	0.3
LDI	527	1	25	1.8	-0.3	909	0	9	0	8.8	0.4
LEI	255	2	15	1.7	0.2	457	0	5	0	10.6	0.3
LIB	461	1	4	1.8	0.7	898	0	2	0	9.9	0.2
LOB	25	16	56	3.9	2.7	32	0	19	0	9.1	-0.1
LOT	185	1	21	2.2	-1.0	304	0	6	0	9.7	0.3
LTU	790	1	19	1.9	0.1	1366	0	5	0	8.1	0.4
MAS	237	4	10	2.2	-0.9	411	0	53	0	10.4	0.8
MDA	140	0	2	2.0	0.3	279	0	2	0	10.7	0.1
MPD	163	1	13	2.4	0.5	302	0	4	0	8.8	0.2
MPH	1016	0	8	1.9	-0.7	1903	0	3	0	8.6	0.4
NCA	502	0	4	1.7	0.1	1003	0	3	0	9.3	0.2
NWA	9387	1	13	1.9	0.6	18237	0	6	0	9.1	0.4
OAL	70	1	34	2.8	2.2	94	0	9	0	8.0	1.0
PAC	168	4	24	2.1	0.7	308	0	9	0	9.0	0.5
PAL	928	1	15	1.7	-0.3	1817	0	8	0	10.4	0.6
PAO	221	4	41	1.4	0.1	428	0	19	0	6.7	0.7
QFA	1292	1	33	1.4	0.2	2533	0	16	0	7.6	0.6
RAF	136	0	3	1.4	0.6	271	0	2	0	8.3	0.9
RAM	68	1	9	2.3	-0.8	130	0	6	0	13.3	1.3
RCH	438	3	26	2.7	1.1	783	0	12	0	12.2	0.7
RJA	25	0	40	1.9	0.3	36	0	14	0	6.2	-0.2
RKA	131	15	16	2.3	0.2	156	0	0	0	9.4	0.2
ROY	29	3	3	1.5	-0.2	51	2	2	0	6.1	0.5
RRR	51	2	20	2.2	-0.4	100	0	7	0	8.5	0.8
SAA	163	3	11	2.0	-0.2	294	0	5	0	10.2	0.8
SAB	43	0	16	2.1	-0.2	74	0	3	0	5.0	0.1
SAS	1161	0	1	1.7	-0.1	2302	0	1	0	7.2	0.3
SCX	283	6	48	1.7	0.5	509	0	22	0	10.2	0.1
SIA	1020	1	7	2.0	-0.7	2008	0	5	0	10.4	0.1
SLR	123	1	15	1.2	-0.1	240	0	20	0	9.7	0.3
SOL	41	2	15	1.3	-0.7	78	0	8	0	10.3	0.9
SPP	196	0	29	2.2	0.0	316	0	11	0	11.4	0.9
SVA	95	0	8	1.8	-0.3	183	1	51	0	12.8	1.0
SWR	140	0	15	2.3	0.3	236	0	3	0	8.3	1.4
TAM	28	0	32	0.8	-0.5	56	0	16	0	7.5	1.1
TAP	500	2	7	1.9	-0.4	986	0	3	0	9.7	0.7
TBA	42	5	26	1.9	0.8	87	0	15	0	13.7	0.2
THA	407	2	8	1.8	-0.7	797	0	5	0	12.3	0.1
THY	29	0	28	3.1	1.7	50	0	12	0	5.7	0.6
TOW	85	1	40	2.1	-0.4	138	0	15	0	9.2	0.5
TPA	24	0	8	1.2	0.2	46	0	9	0	13.4	0.2

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
TWA	1459	2	33	2.0	-0.2	2267	0	12	0	9.0	0.6
UAL	105491	0	90	1.7	-0.2	210373	0	45	0	7.4	0.5
UNS	842	0	100	1.5	0.6	1681	0	50	0	7.0	0.7
UPS	917	0	37	2.0	0.3	1743	0	18	0	8.7	0.4
USA	251	1	27	2.2	0.4	398	0	36	0	9.7	0.5
VIR	282	0	10	1.7	-0.5	511	0	4	0	8.2	1.0
VKG	31	0	0	1.6	0.9	60	0	2	0	9.3	0.3
VRG	254	6	24	2.1	0.7	492	1	11	0	12.4	0.0
VSP	141	3	14	2.5	0.9	284	1	36	0	9.4	0.8
WOA	95	0	6	1.7	0.0	185	0	3	0	7.1	0.4
AN	18059	0	1	1.0	0.0	36118	0	0	0	6.2	0.4
AR	2154	1	16	2.1	1.6	4308	0	7	0	6.9	0.6
BA	14977	0	0	1.4	0.5	29798	0	6	0	7.0	0.8
FJ	37	0	11	2.7	0.6	74	0	5	0	6.7	-0.2
IT	289	0	17	0.7	0.2	578	0	9	0	5.7	0.5
KL	12006	0	22	1.5	0.8	24010	0	11	0	6.7	0.4
LH	2727	0	1	1.6	0.7	5556	0	1	0	6.9	0.6
MK	1743	0	0	1.9	1.6	3484	0	0	0	8.0	1.0
QF	18056	0	1	1.2	0.4	36111	0	1	0	6.3	0.6
SA	1653	0	0	2.5	2.1	3307	0	0	0	6.9	0.6
SV	1600	2	3	1.5	0.3	3173	0	1	0	7.0	0.3
UA	1771	2	27	2.0	0.1	3619	0	13	0	9.9	1.0
WA	502	9	13	1.8	0.6	925	4	11	5	14.0	-1.2
XX	3997	2	4	2.0	0.5	8845	0	6	1	14.7	0.4
N	580	4	26	2.6	0.3	971	0	10	0	9.9	0.3
ADS	749	0	0	1.2	-0.1	1498	0	14	0	6.4	0.6
US ACAR	440430	0	13	1.6	0.1	880109	0	6	0	7.3	0.6

MEAN DAILY COUNT OF AIRCRAFT 70 - 500 HPA FIGURE 3
FEBRUARY 1998
OBSERVATIONS WITH O-B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED


0 0 0 2 0 2 1 1 0 0 0 0 0
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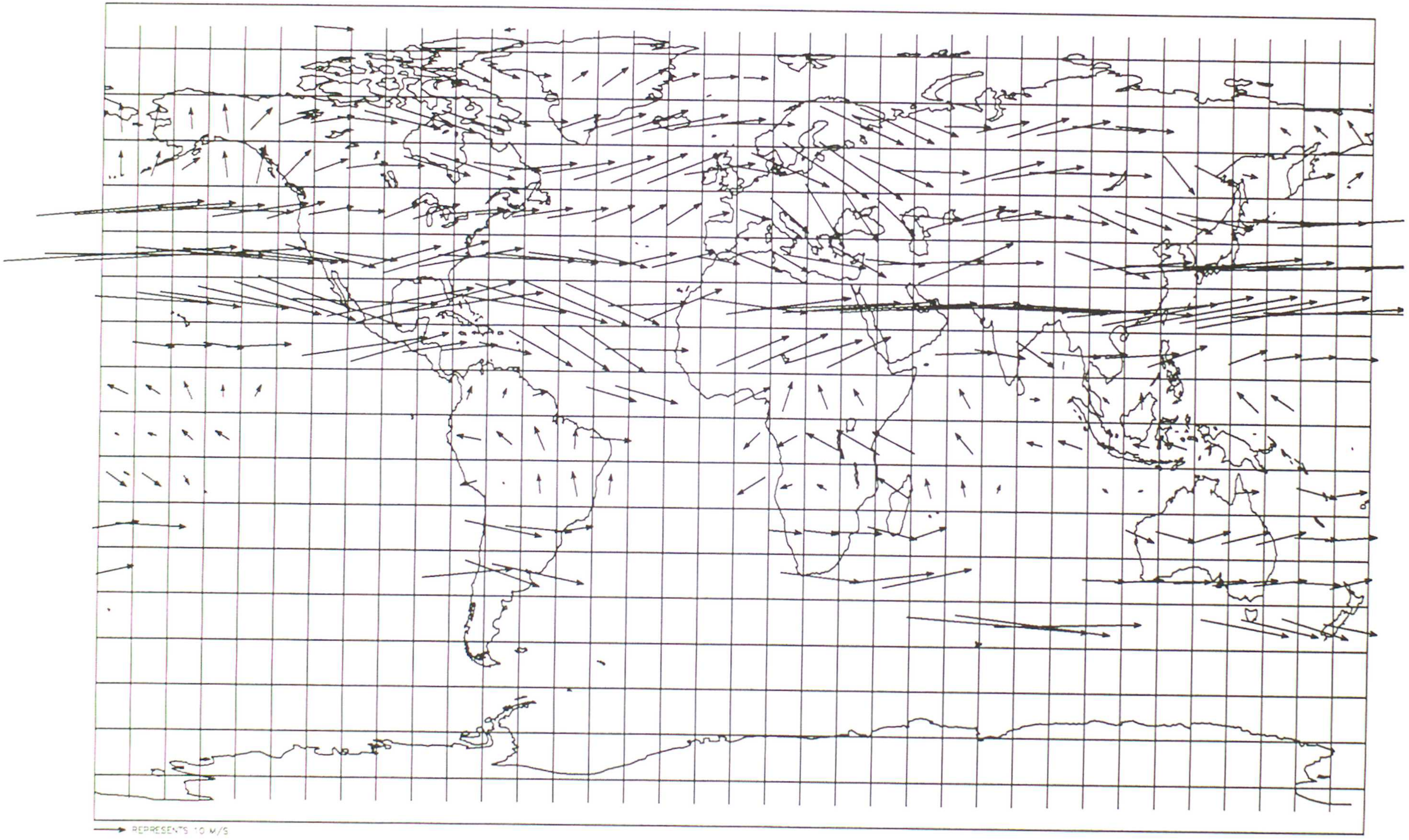
3 6 6 24 7 6 2 3 5 6 12 23 46 56 76 41 19 3 0 1 5 7 6 6 3 2 2 2 2 0 1 2 1
15 18 19 60 10 57 30 23 15 9 11 32 62 138 163 190 231 45 45 16 12 8 7 1 5 7 7 3 1 4 5 3 1 11 17
7 41 46 53 97 656 970 1591 2039 2710 965 126 77 86 102 124 156 43 233 16 16 13 2 2 10 5 5 5 7 7 2 10 90 70 84 32
8 38 34 64 174 890 2643 3107 3156 3292 784 45 43 65 57 22 19 7 29 8 14 6 13 14 2 10 1 6 5 17 6 86 102 112 63
1 52 242 171 51 11 29 122 190 622 623 108 66 44 16 9 8 22 4 7 11 10 16 23 18 14 4 7 51 17 18 20 7 13 15
0 11 6 4 6 0 0 13 61 38 47 106 26 4 2 11 1 0 14 9 2 8 0 3 8 6 16 7 26 9 1 3 3 3 3
6 9 11 5 3 0 0 0 42 8 7 0 10 10 1 1 7 8 3 8 5 0 2 11 43 3 8 0 9 3 0
27 31 22 3 0 27 6 14 1 11 1 1 1 3 3 11 5 3 5 1 7 5 32 45 15 8 0 10
28 19 9 0 8 6 8 15 5 1 1 2 5 9 2 2 7 8 6 1 0 5 29 64 58 22 1 5 33
23 10 1 0 0 0 0 8 7 19 0 1 0 5 9 7 6 4 1 1 1 0 0 29 42 69 117 95 59 36
7 1 3 2 8 0 1 1 2 2 2 2 1 1 1 1 2 26 26 48 339 187 73 14
0 0 0 0 0 0 0 0 1 1 1 1 0 0 0 0 7 3 15 4
0 0 0 0 0 0 0 0 1 1 0 1 0 0 0
0 0 0 0 0 0 0 0 1
0 0

AIRCRAFT MEAN WINDS BETWEEN 70 AND 500 HPA
FEBRUARY 1998
OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

FIGURE 4

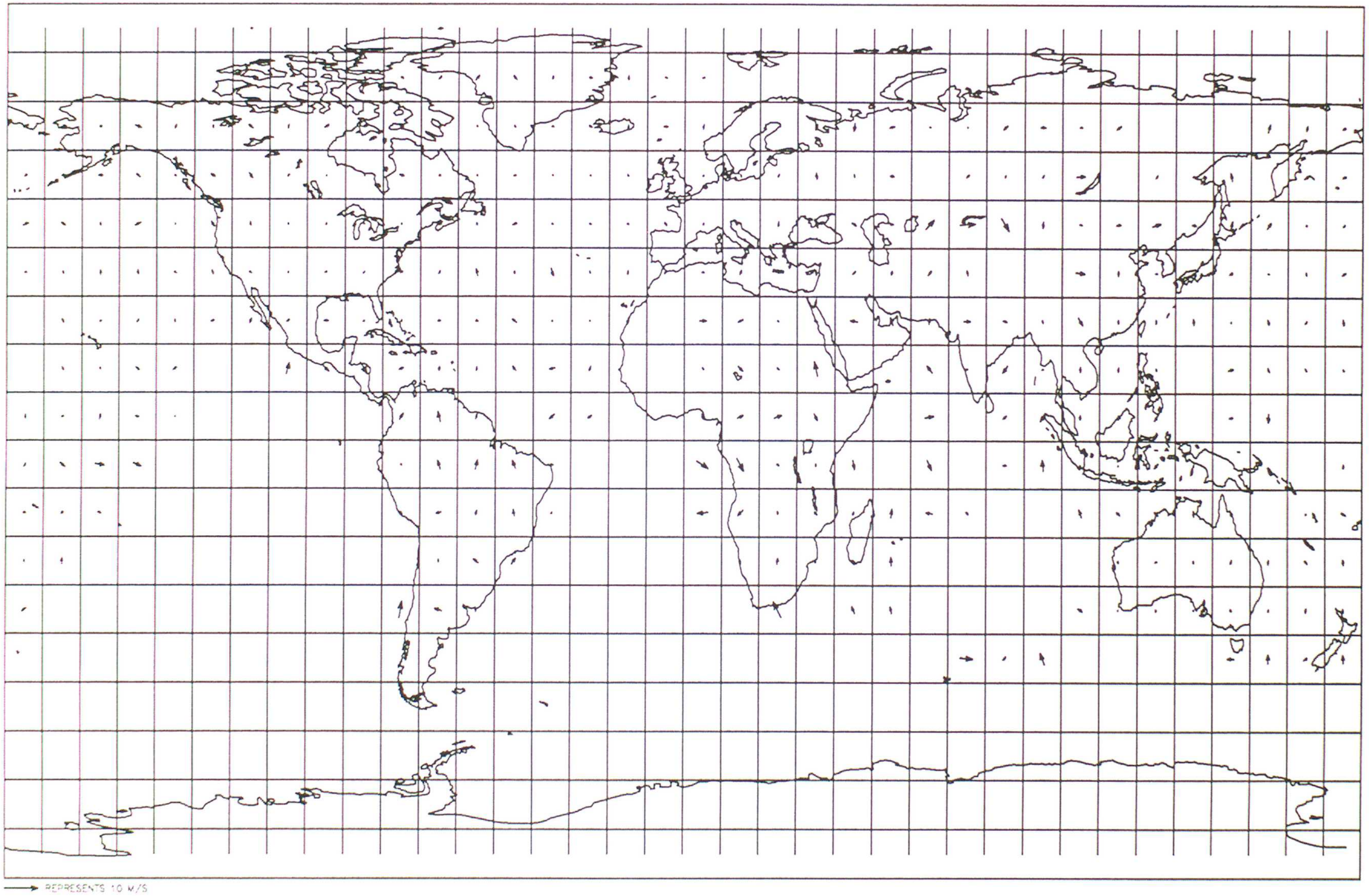


AIRCRAFT MEAN O–B WINDS BETWEEN 70 AND 500 HPA FIGURE 5

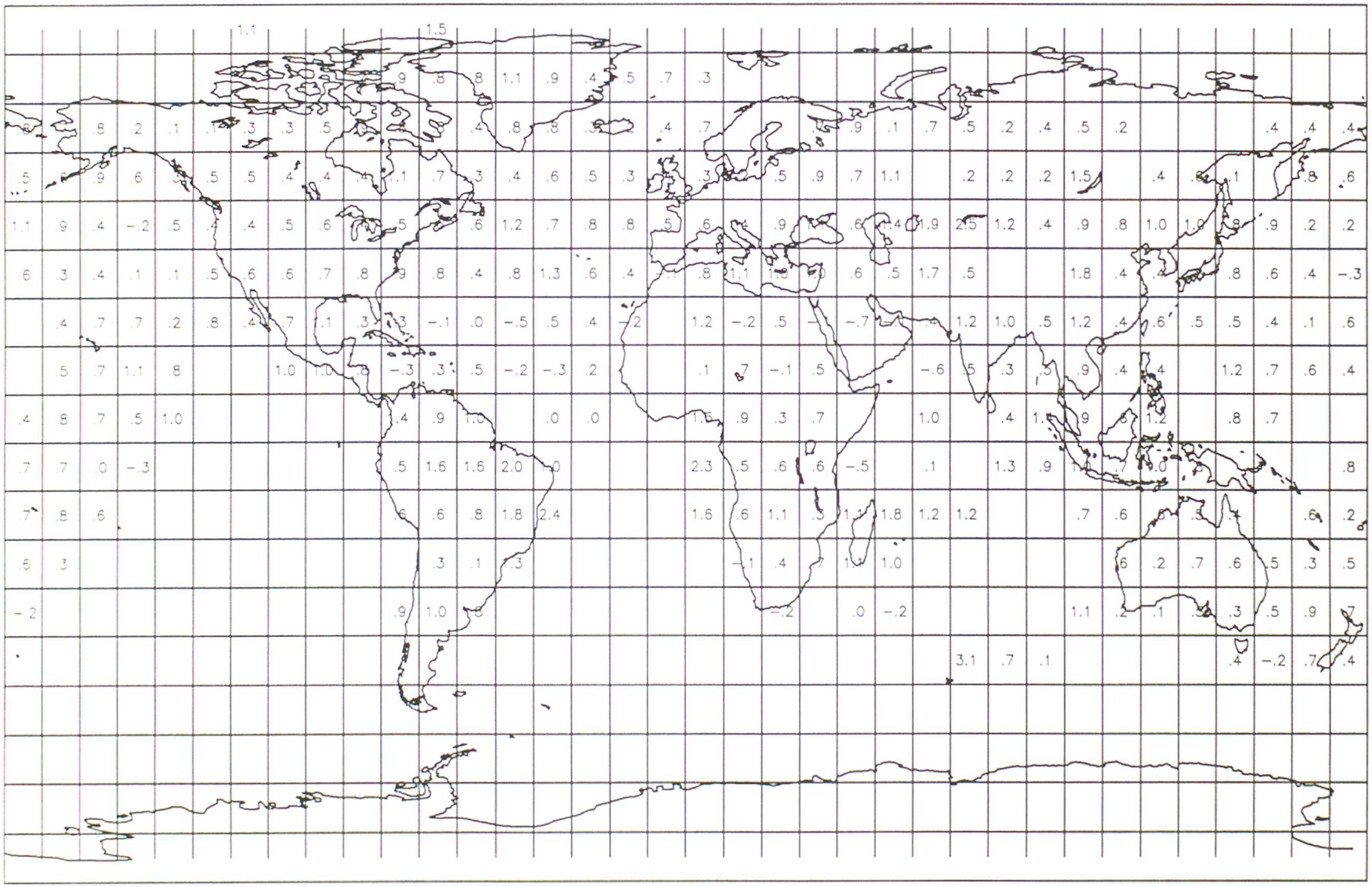
FEBRUARY 1998

OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED

VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT



AIRCRAFT : MEAN O–B SPEEDS (M/S) BETWEEN 70 AND 500 HPA FIGURE 6
FEBRUARY 1998
OBSERVATIONS WITH O–B VECTOR DIFFERENCE > 60 MPS EXCLUDED
VALUES ARE PRINTED WHERE > 30 OBS ARE PRESENT


1.1 1.5
.9 .8 .8 1.1 .9 .4 .5 .7 .3
.8 .2 .1 .1 .3 .3 .5 .4 .8 .8 .2 .4 .7 .9 .1 .7 .5 .2 .4 .5 .2 .4 .4 .4
.5 .9 .6 .5 .5 .4 .4 1.1 .7 .3 .4 .6 .5 .3 .3 .5 .9 .7 1.1 .2 .2 .2 1.5 .4 .1 .8 .6
1.1 .9 .4 –.2 .5 .4 .4 .5 .6 .5 .6 1.2 .7 .8 .8 .5 .6 .9 .6 1.9 2.5 1.2 .4 .9 .8 1.0 .9 .2 .2
.6 .3 .4 .1 .1 .5 .6 .6 .7 .8 .9 .8 .4 .8 1.3 .6 .4 .8 1.1 .6 .5 1.7 .5 1.8 .4 .8 .6 .4 –.3
.4 .7 .7 .2 .8 .4 .7 .1 .3 .3 –.1 .0 –.5 .5 .4 –.2 1.2 –.2 .5 –.7 1.2 1.0 .5 1.2 .4 .6 .5 .5 .4 .1 .6
.5 .7 1.1 .8 1.0 1.0 –.3 .3 .5 –.2 –.3 .2 .1 .7 –.1 .5 –.6 .5 .3 .9 .4 .4 1.2 .7 .6 .4
.4 .8 .7 .5 1.0 .4 .9 .0 .0 .9 .3 .7 1.0 .4 .9 1.2 .8 .7
.7 .7 .0 –.3 .5 1.6 1.6 2.0 2.3 .5 .6 .6 –.5 .1 1.3 .9 .8
.7 .8 .6 .6 .6 .8 1.8 2.4 1.6 .6 1.1 1.8 1.2 1.2 .7 .6 .4 .6 .2
.6 .3 .3 .1 .3 .4 1.0 .6 .2 .7 .6 .5 .3 .5
–.2 .9 1.0 –.2 .0 –.2 1.1 .1 .3 .5 .9 .7
3.1 .7 .1 .4 –.2 .7 .4

AIRCRAFT : RMS O–B VECTOR (M/S) BETWEEN 70 AND 500 HPA FIGURE 7
FEBRUARY 1998
OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED
VALUES ARE PRINTED WHERE > 30 OBS ARE PRESENT

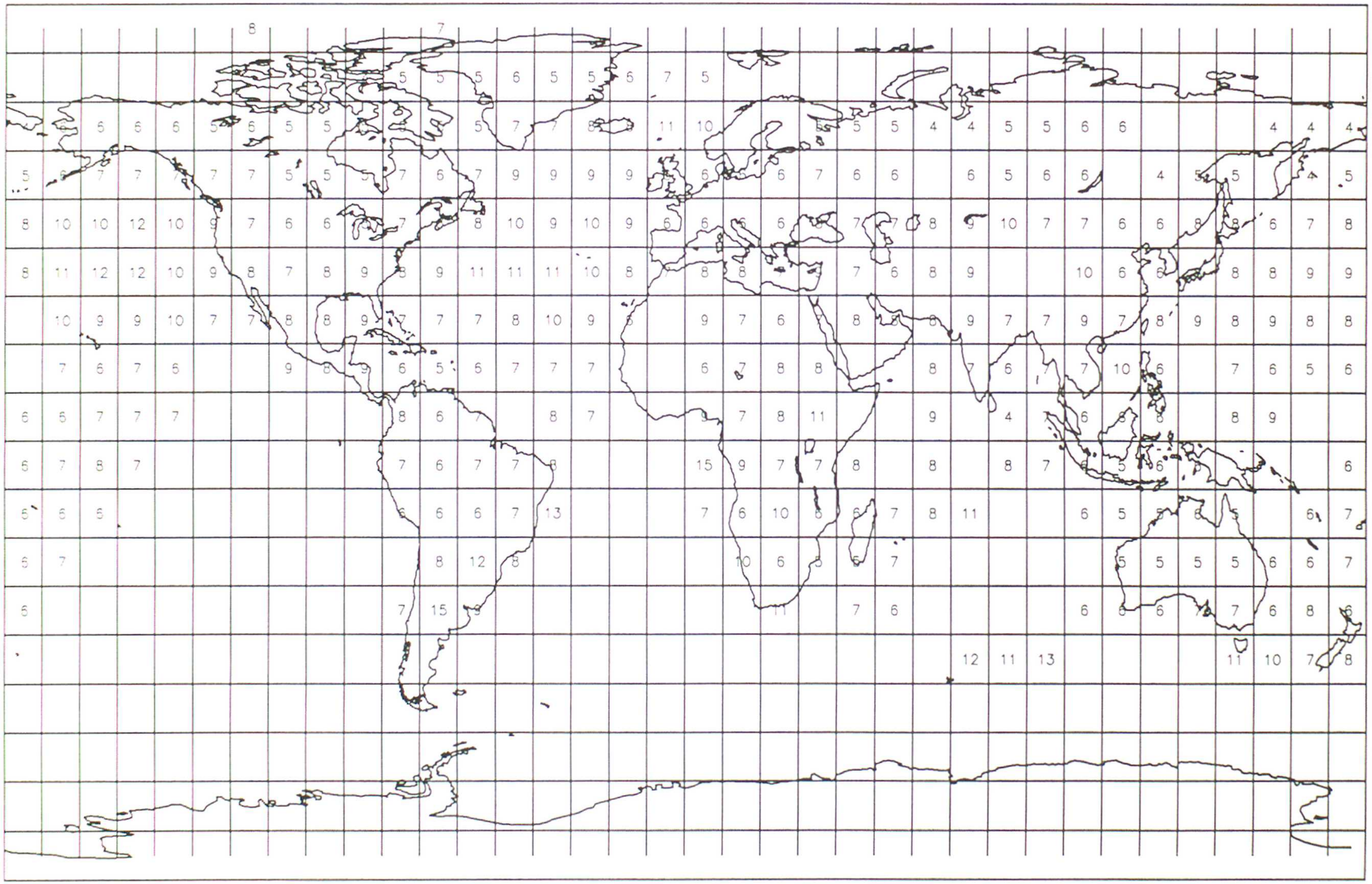

8 7
5 5 5 6 5 5 6 7 5
6 5 6 6 5 6 5 5 5 7 7 8 9 11 10 5 5 5 4 4 5 5 6 6 4 4 4
5 6 7 7 7 7 7 5 5 5 7 6 7 9 9 9 9 6 5 6 7 6 6 6 5 6 6 4 5 5 4 5
8 10 10 12 10 9 7 6 6 7 8 10 9 10 9 6 6 6 6 7 7 8 9 10 7 7 6 6 8 8 6 7 8
8 11 12 12 10 9 8 7 8 9 8 9 11 11 11 10 8 7 8 8 7 6 8 9 10 6 6 8 8 9 9
10 9 9 10 7 7 8 8 9 7 7 7 8 10 9 6 9 7 6 8 8 9 7 7 9 7 8 9 8 9 8 8
7 6 7 6 9 8 9 6 5 6 7 7 7 6 7 8 8 8 7 6 7 7 10 6 7 6 5 6
6 6 7 7 7 8 6 7 8 7 9 7 8 11 9 4 7 6 8 8 8 9
6 7 8 7 7 6 7 7 8 15 9 7 7 8 8 8 7 6 5 6 6
6 6 6 6 6 6 7 13 7 6 10 8 6 7 8 11 6 5 5 6 5 6 7
6 7 8 12 8 10 6 5 5 7 5 5 5 5 6 6 7
6 7 15 9 11 7 6 6 6 6 7 7 6 8 6
12 11 13 11 10 7 8

TABLE 5

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: February, 1998

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from Bracknell global model.
Observation times		:00 UTC and 12 UTC.
Level(s) monitored		:Standard levels between 1000.0 - 30.0 hPa
Element monitored		:GEOPOTENTIAL HEIGHT IN metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown duringperiod.
	:% REJ	:Percentage of observations rejected by quality control at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.
	:NUM LEVELS	:Number of levels satisfying selection criteria.
GROSS ERROR LIMITS	:Defined in Appendix I.1	
SELECTION CRITERIA	: >3 levels with ≥10 observations and > 100 m weighted RMS.	

ONLY THE WORST LEVEL IS SHOWN WITH UNWEIGHTED RMS

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS	NUM LEVELS
17220	12	Z	100	38/ 27	19	0	67.9	102.4	122.8	4
33345	12	Z	100	50/ 31	16	0	55.4	180.4	188.7	4
33791	12	Z	100	48/ 33	10	0	66.8	199.1	210.0	4
42027	00	Z	1000	34/ 75	17	0	34.2	34.4	48.5	7
42101	00	Z	100	30/ 76	16	1	81.6	-121.6	146.5	5
42339	12	Z	100	26/ 73	11	1	110.7	100.5	149.5	5
42492	00	Z	150	26/ 85	12	0	60.8	-82.8	102.8	5
42647	12	Z	100	23/ 73	11	0	91.0	157.7	182.1	6
42701	12	Z	200	23/ 85	12	0	64.8	48.2	80.7	4
42867	12	Z	200	21/ 79	18	0	68.3	64.2	93.8	6
42874	12	Z	250	21/ 82	12	0	82.4	68.6	107.2	4
43003	12	Z	100	19/ 73	19	0	85.0	154.6	176.4	6
43014	00	Z	150	20/ 75	14	1	88.9	-150.7	175.0	6
43128	12	Z	200	17/ 78	24	0	73.5	49.0	88.4	4
43192	12	Z	200	15/ 74	19	0	83.6	35.6	90.9	4
43279	12	Z	200	13/ 80	23	0	60.8	71.8	94.1	5
43295	00	Z	100	13/ 78	11	1	144.6	34.6	148.7	6
43295	12	Z	150	13/ 78	8	1	71.2	135.6	153.2	6
43353	00	Z	200	10/ 76	19	0	71.7	-72.1	101.7	7
43369	12	Z	100	8/ 73	13	2	90.2	106.1	139.2	5
48455	00	Z	400	14/ 101	25	0	46.0	-46.6	65.4	5
54337	12	Z	100	41/ 121	14	0	109.9	-19.5	111.6	6
70414	12	Z	1000	53/ 174	20	0	8.8	31.3	32.5	5
72376	12	Z	1000	37/-108	27	0	30.6	26.0	40.2	4
84628	12	Z	850	-12/ -77	12	0	6.3	-71.8	72.1	8
89664	00	Z	1000	-78/ 167	22	0	29.2	-8.0	30.2	4
96237	00	Z	200	-2/ 106	11	0	29.2	-110.2	114.0	7
97560	00	Z	200	-1/ 136	16	0	46.6	-67.6	82.1	4
97560	12	Z	200	-1/ 136	19	0	43.1	-109.1	117.3	7

AVAILABILITY – TEMP – 500 HPA GEOPOTENTIAL – FEBRUARY 1998 FIGURE 8

ALL HOURS

10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS – 1394

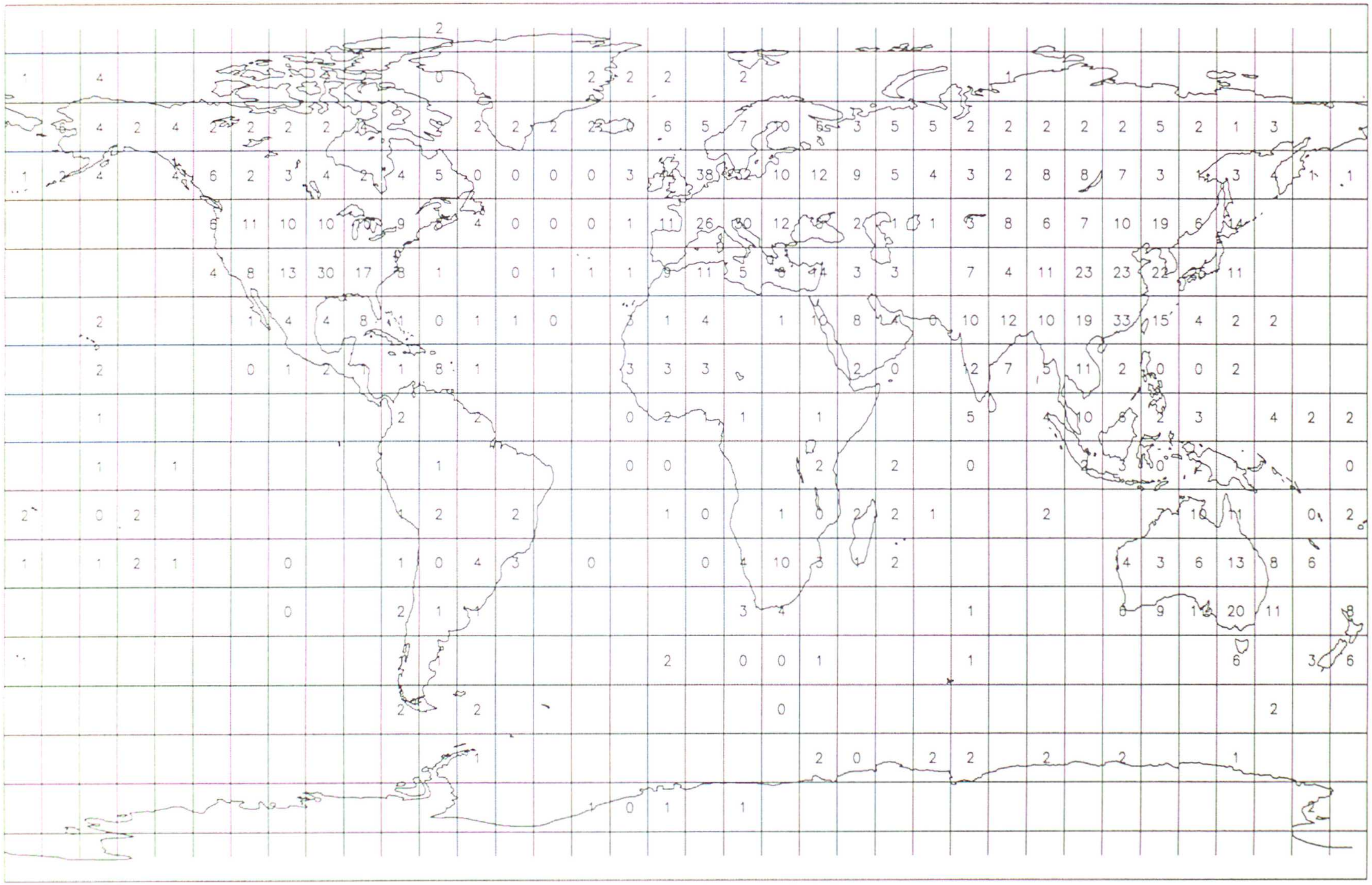


TABLE 6

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: February, 1998

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for radiosonde TEMPs.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from Bracknell global model.

Observation times :00 UTC and 12 UTC.

Level(s) monitored :Standard levels between 1000.0 - 100.0 hPa

Element monitored :VECTOR WIND in m s^{-1}

Parameters monitored

:NUM OBS	:Number of observations available at level shown during period.
:NUM GROSS	:Number of gross errors at level shown during period.
:% REJ	:Percentage of observations rejected by quality control at level shown during period.
:UBIAS,VBIAS	:Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.
:NUM LEVELS	:Number of levels satisfying selection criteria.

GROSS ERROR LIMITS :Defined in Appendix 1.2

SELECTION CRITERIA : $\geq$ 10 observations and $\geq$ 15 m s^{-1} RMS vector wind.

ONLY THE STANDARD LEVEL BETWEEN 1000 - 100 hPa WITH HIGHEST RMS IS SHOWN

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	% REJ	UBIAS	VBIAS	RMS	LEVELS
17280	12	V	250	38/ 40	13	0	15	4.7	3.1	17.0	1
42101	00	V	100	30/ 76	10	1	18	11.4	-1.4	16.8	1
42182	12	V	200	29/ 77	12	0	8	-8.1	1.9	16.1	1
42369	12	V	200	27/ 81	15	0	13	-4.6	-11.2	18.1	3
42379	00	V	300	27/ 83	13	0	0	-10.5	1.7	15.5	1
42397	00	V	300	27/ 88	10	0	10	-1.6	-3.0	15.6	1
42724	00	V	250	24/ 91	11	0	0	-15.5	3.0	18.5	2
42724	12	V	300	24/ 91	14	0	0	-15.4	5.3	16.8	1
43014	00	V	300	20/ 75	10	1	18	17.6	-2.3	16.8	1
43285	12	V	300	13/ 75	12	0	8	4.7	3.5	15.1	1
48407	12	V	150	15/ 105	11	0	27	-16.0	-2.7	17.4	1
56985	12	V	150	23/ 103	26	0	11	5.8	3.8	15.9	1
58968	12	V	250	25/ 122	27	1	25	13.9	2.9	23.5	4
72206	12	V	200	30/ -82	15	0	6	-8.1	-1.7	15.0	1
72251	12	V	150	28/ -97	13	0	15	-1.5	-2.2	16.0	1
72376	00	V	250	37/-108	25	0	16	5.5	-5.9	15.5	1
72376	12	V	250	37/-108	20	0	15	6.9	-2.5	16.4	2
89009	00	V	300	-90/ 0	20	0	10	1.8	7.8	17.4	1

AVAILABILITY – TEMP/PILOT – 300 HPA WIND – FEBRUARY 1998

FIGURE 9

ALL HOURS
10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS
GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS – 1196

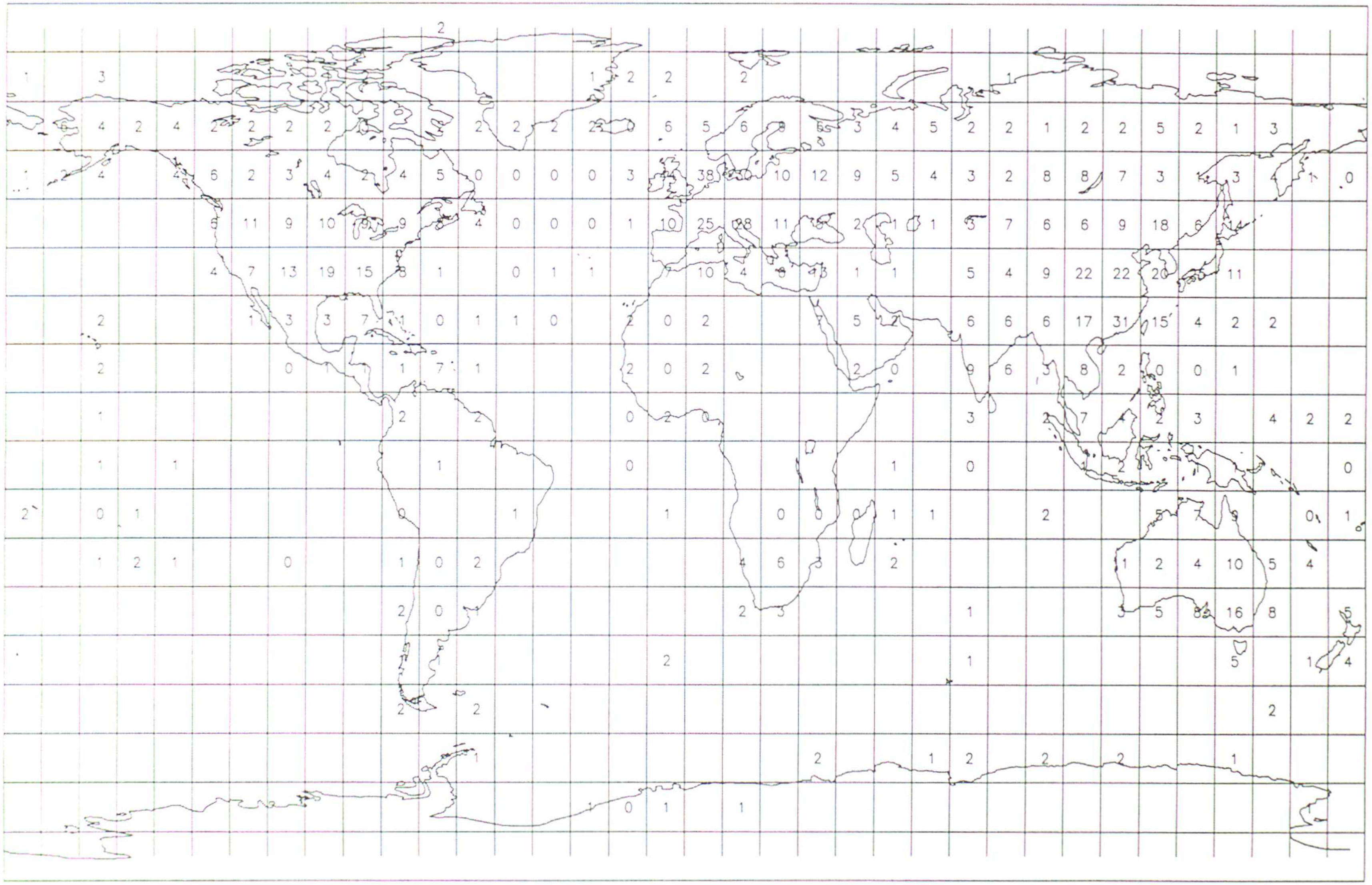


TABLE 7

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: February, 1998

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for radiosonde TEMPs.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from Bracknell global model.

Observation times :00 UTC and 12 UTC.

Level(s) monitored :Standard levels between 500.0 - 150.0 hPa

Element monitored :WIND DIRECTION in degrees

Parameters monitored

:NUM OBS :Average number of observations at all levels.

:BIAS :Mean difference of observations from background values from all levels.

:MAX SPREAD :(For observation - background values) Maximum absolute difference of SD at any level from SD at all levels

:SD :SD of difference of observations from background values at all levels.

SELECTION CRITERIA :NUM OBS > 5, and
ABSOLUTE BIAS > 10°, with
SD < 30°, and
MAX SPREAD < 10°

WMO IDENT	OBS TIME	ELM	LAT/LONG	NUM OBS	BIAS	MAX SPREAD	SD
10828	12	DD	48/ 9	9	10.7	3.5	11.7
37549	00	DD	42/ 45	16	-10.7	4.3	11.3
42369	12	DD	27/ 81	17	11.3	1.7	7.8
42397	12	DD	27/ 88	8	10.7	8.2	8.2
62337	00	DD	31/ 34	18	-18.8	8.2	12.3
62337	12	DD	31/ 34	18	-17.0	8.9	13.8
62414	12	DD	24/ 33	24	-33.7	1.5	29.8
63985	12	DD	-5/ 56	13	-14.5	10.0	29.6
65578	12	DD	5/ -4	15	-11.9	9.3	26.7
76458	00	DD	23/-106	14	-21.4	3.7	8.9
78970	12	DD	11/ -61	17	26.6	4.9	17.1
78988	12	DD	12/ -69	14	14.5	9.5	24.7
91217	12	DD	14/ 145	14	-17.0	7.4	23.5

MONITORING OF SATELLITE WINDS

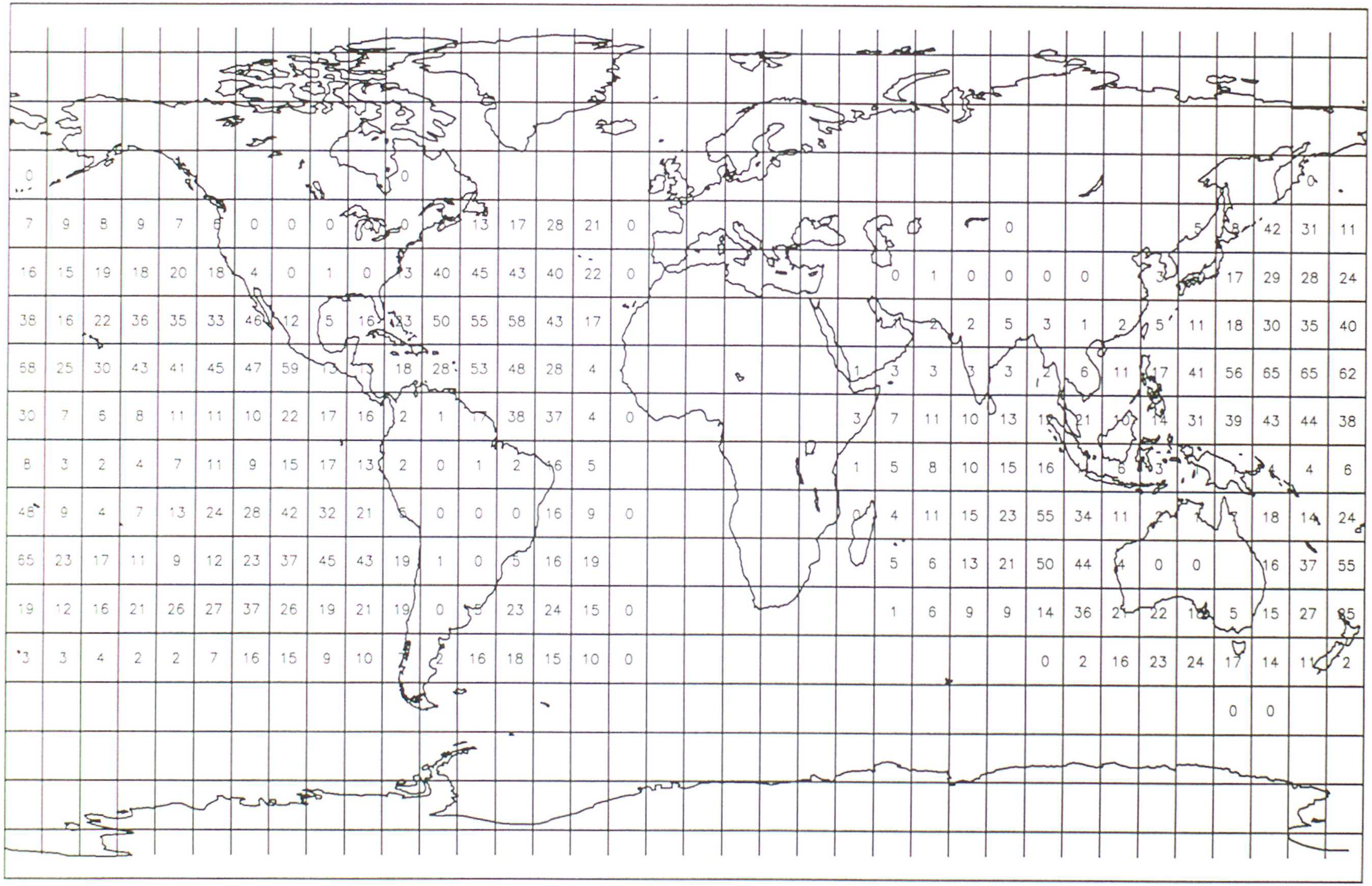
MONITORING CENTRE: BRACKNELL

MONTH: February, 1998

Monitoring procedures

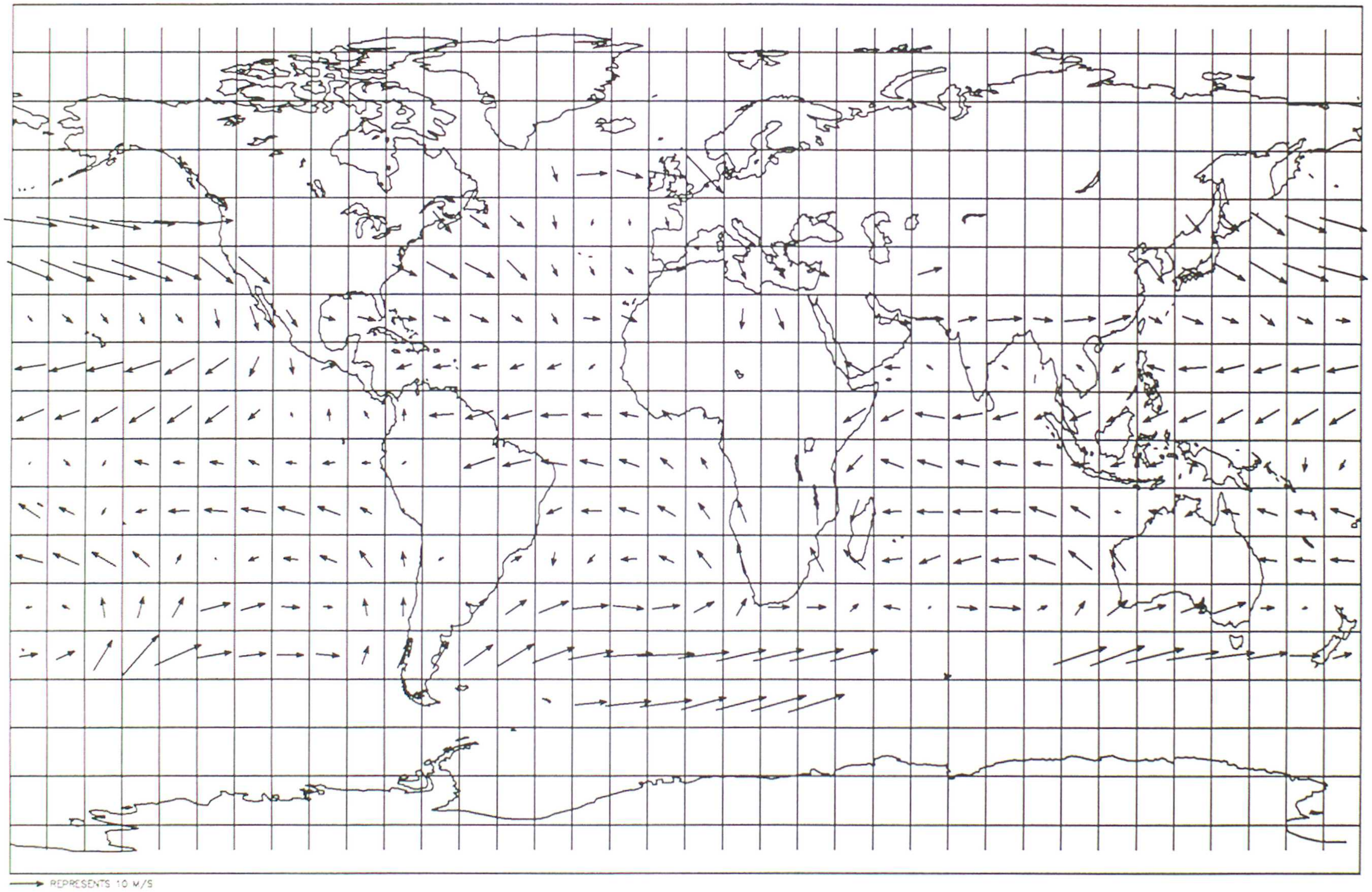
Period	:One calendar month.
Data monitored	:Reports from GOES, METEOSAT, GMS, INSAT.
Standard of comparison	:Background field from Bracknell global model.
Selection Criteria	:number of observations > 10.
Data Extracted	:Layer 701 - 1000 hPa 401 - 700 hPa 101 - 400 hPa
	:Mean wind
	:Mean observation minus background vector wind differences
	:Mean observation minus background speed differences
	:RMS of observation minus background vector differences

AVERAGE DAILY NUMBER OF SATOB OBSERVATIONS BETWEEN 701 AND 1000 HPA FIGURE 10
FEBRUARY 1998


0 0 0
7 9 8 9 7 6 0 0 0 0 0 13 17 28 21 0 0 5 8 42 31 11
16 15 19 18 20 18 4 0 1 0 13 40 45 43 40 22 0 0 1 0 0 0 0 3 17 29 28 24
38 16 22 36 35 33 46 12 5 16 23 50 55 58 43 17 1 2 2 5 3 1 2 5 11 18 30 35 40
58 25 30 43 41 45 47 59 13 13 18 28 53 48 28 4 1 3 3 3 3 2 6 11 17 41 56 65 65 62
30 7 6 8 11 11 10 22 17 16 2 1 17 38 37 4 0 3 7 11 10 13 19 21 10 14 31 39 43 44 38
8 3 2 4 7 11 9 15 17 13 2 0 1 2 16 5 1 5 8 10 15 16 6 3 1 4 4 6
48 9 4 7 13 24 28 42 32 21 6 0 0 0 16 9 0 0 4 11 15 23 55 34 11 2 1 7 18 14 24
65 23 17 11 9 12 23 37 45 43 19 1 0 5 16 19 5 6 13 21 50 44 4 0 0 16 37 55
19 12 16 21 26 27 37 26 19 21 19 0 5 23 24 15 0 1 6 9 9 14 36 21 22 18 5 15 27 35
3 3 4 2 2 7 16 15 9 10 7 2 16 18 15 10 0 0 2 16 23 24 17 14 11 2
0 0

SATOB VECTOR MEAN WINDS BETWEEN 701-1000 HPA
FEBRUARY 1998
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

FIGURE 11


REPRESENTS 10 M/S

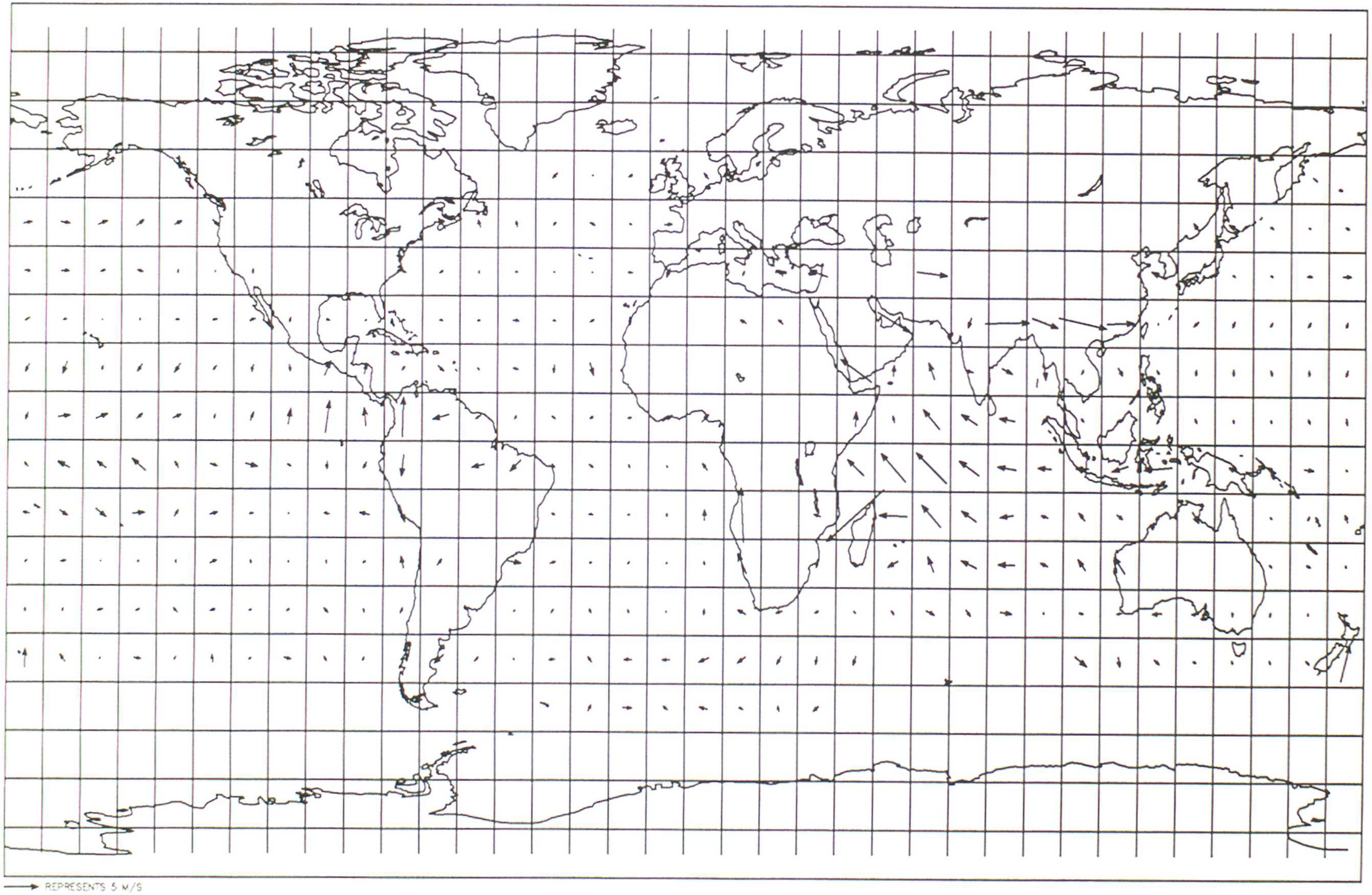
SATOB O-B VECTOR WIND DIFFERENCES BETWEEN 701-1000 HPA

FEBRUARY 1998

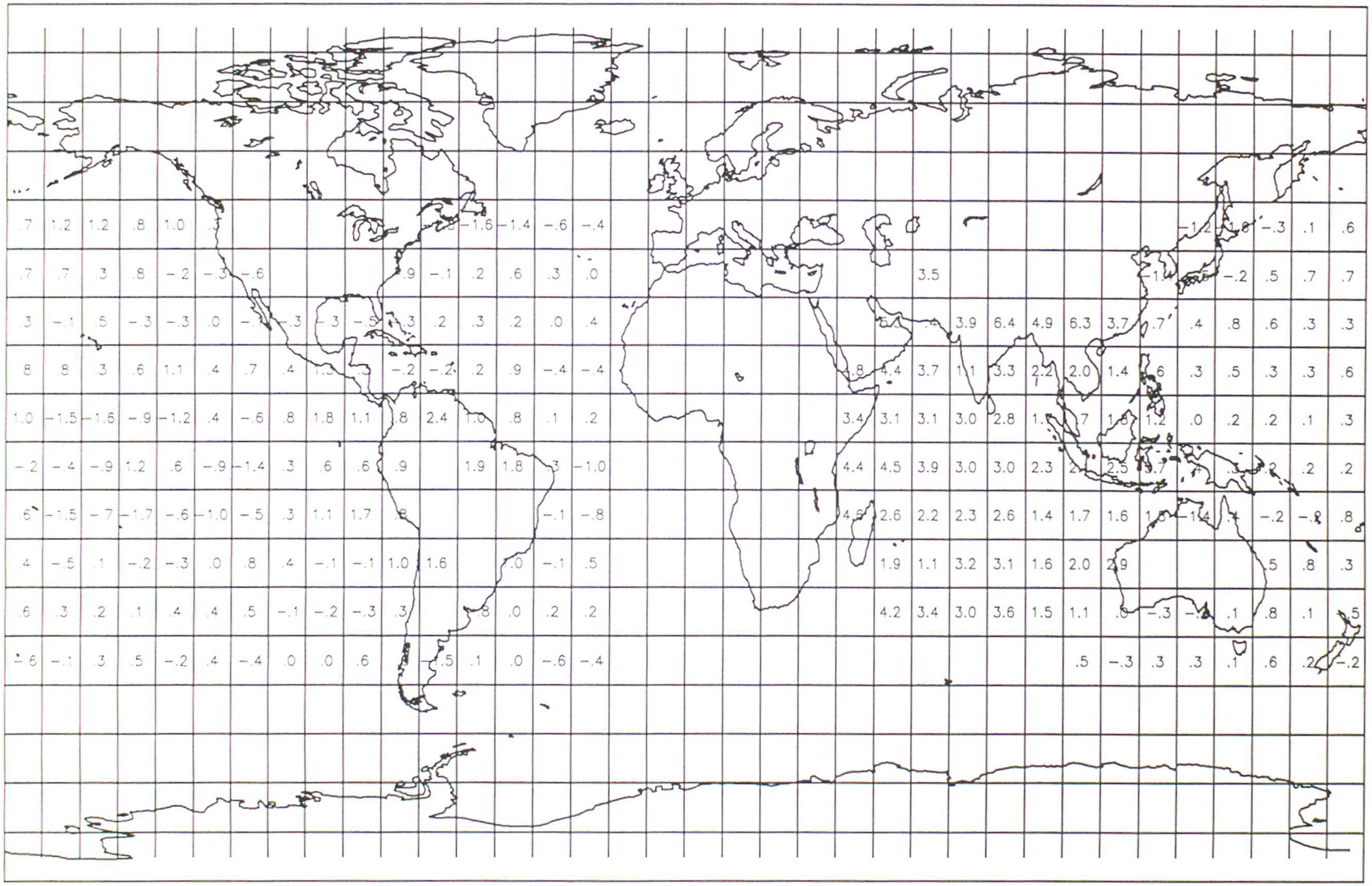
ALL OBSERVATIONS

ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

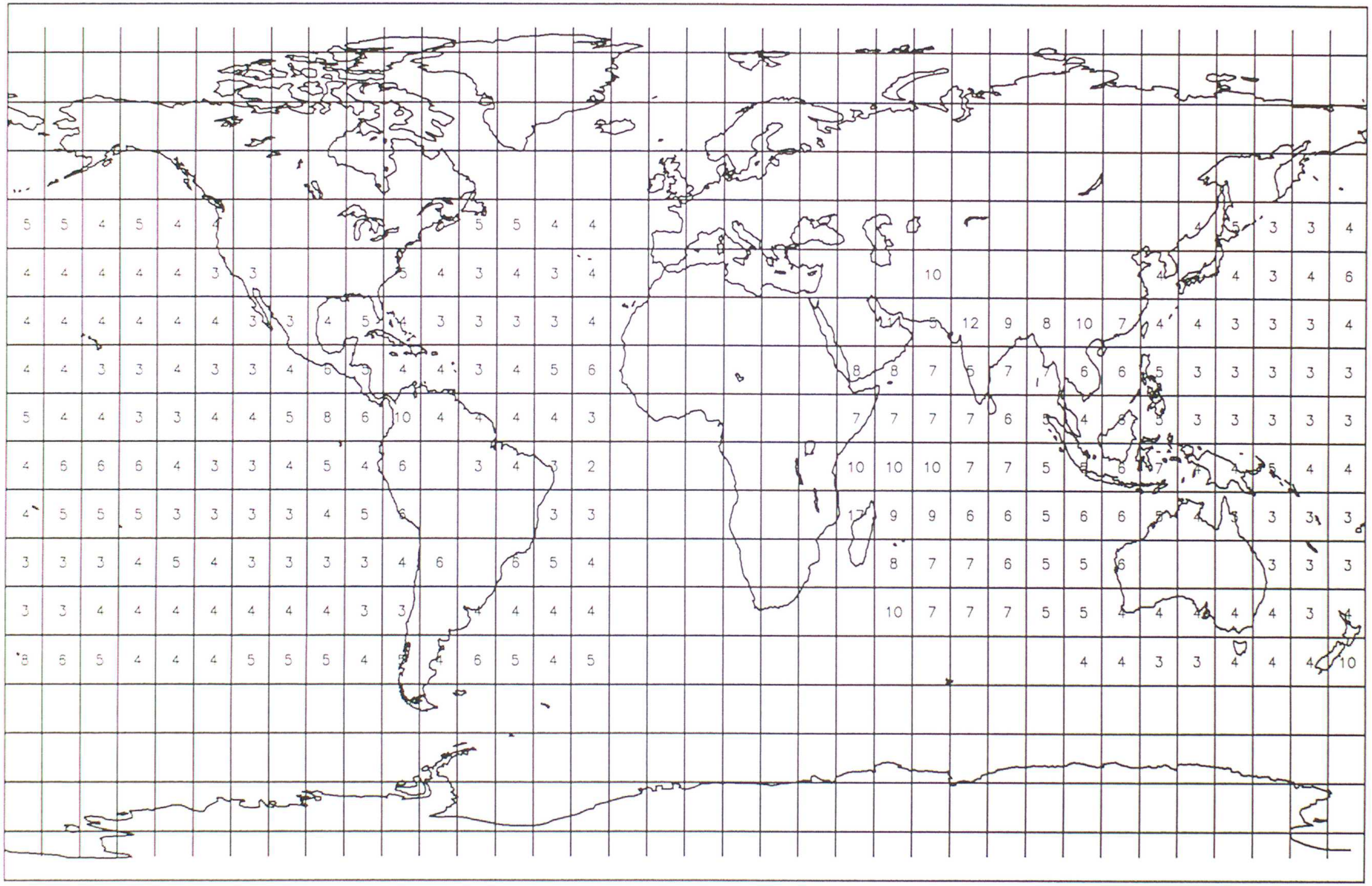
FIGURE 12



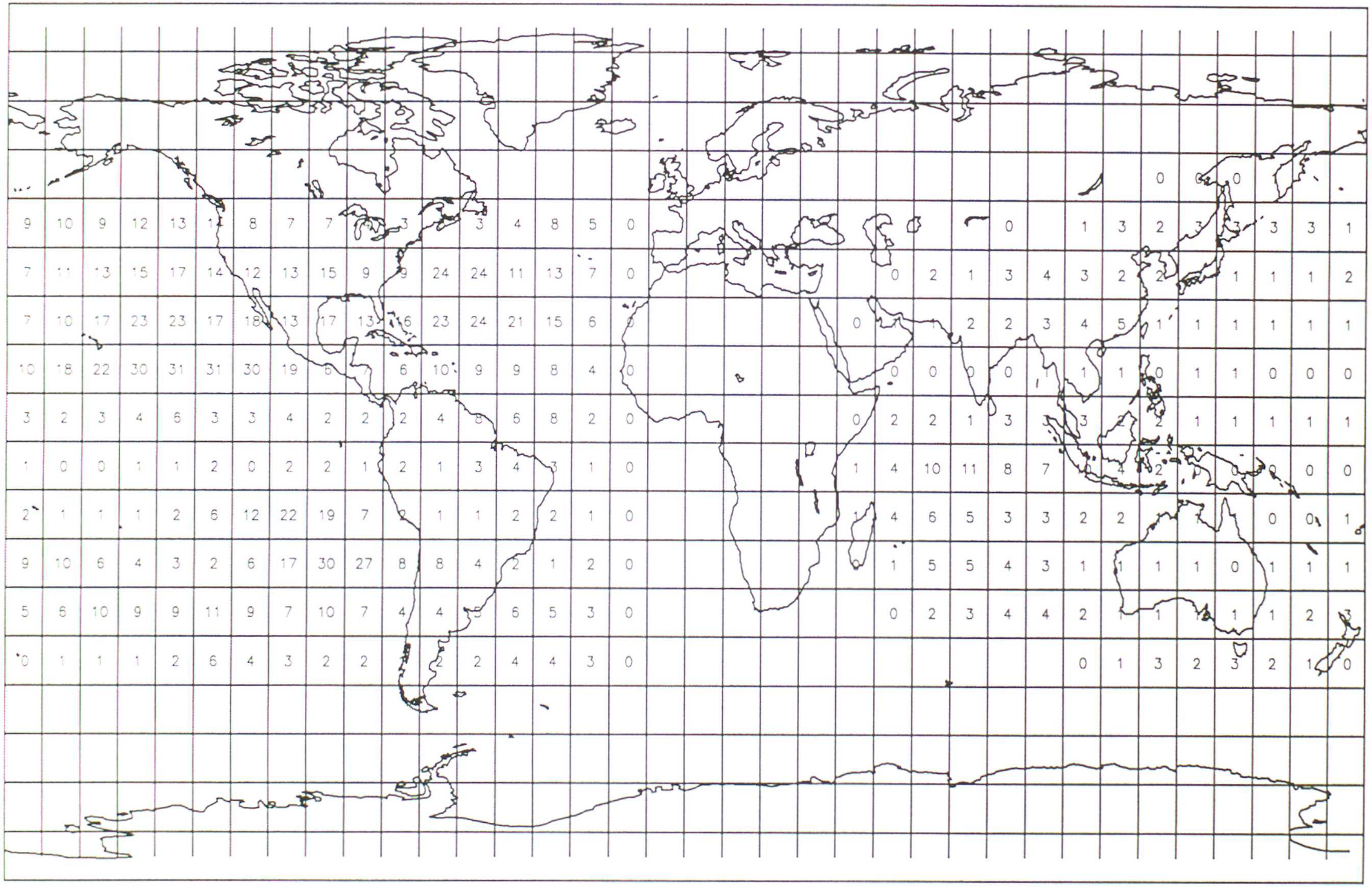
SATOBS : MEAN O–B SPEED DIFFERENCES (M/S) BETWEEN 701 AND 1000 HPA FIGURE 13
FEBRUARY 1998
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


.7 1.2 1.2 .8 1.0 .3 -1.6 -1.4 -.6 -.4 -1.2 -1.8 -.3 .1 .6
.7 .7 .3 .8 -.2 -.3 -.6 .9 -.1 .2 .6 .3 .0 3.5 -1.4 -.2 .5 .7 .7
.3 -.1 .5 -.3 -.3 .0 -.1 -.3 -.3 -.5 .3 .2 .3 .2 .0 .4 .4 3.9 6.4 4.9 6.3 3.7 .7 .4 .8 .6 .3 .3
.8 .8 .3 .6 1.1 .4 .7 .4 1.3 .3 -.2 -.2 .2 .9 -.4 -.4 .8 4.4 3.7 1.1 3.3 2.2 2.0 1.4 .6 .3 .5 .3 .3 .6
1.0 -1.5 -1.6 -.9 -1.2 .4 -.6 .8 1.8 1.1 .8 2.4 1.0 .8 .1 .2 3.4 3.1 3.1 3.0 2.8 1.7 .7 1.8 1.2 .0 .2 .2 .1 .3
-.2 -.4 -.9 1.2 .6 -.9 -1.4 .3 .6 .6 .9 1.9 1.8 .3 -1.0 4.4 4.5 3.9 3.0 3.0 2.3 2.5 3.7 .4 .2 .2
.6 -1.5 -.7 -1.7 -.6 -1.0 -.5 .3 1.1 1.7 .8 -.1 -.8 4.6 2.6 2.2 2.3 2.6 1.4 1.7 1.6 1.6 -1.4 .4 -.2 -.2 .8
.4 -.5 .1 -.2 -.3 .0 .8 .4 -.1 -.1 1.0 1.6 .0 -.1 .5 1.9 1.1 3.2 3.1 1.6 2.0 2.9 .5 .8 .3
.6 .3 .2 .1 .4 .4 .5 -.1 -.2 -.3 .3 .8 .0 .2 .2 4.2 3.4 3.0 3.6 1.5 1.1 .0 -.3 -.3 .1 .8 .1 .5
-.6 -.1 .3 .5 -.2 .4 -.4 .0 .0 .6 -.5 .1 .0 -.6 -.4 .5 -.3 .3 .3 .1 .6 .2 -.2

SATOBS : RMS O-B VECTOR DIFFERENCES (M/S) BETWEEN 701 AND 1000 HPA FIGURE 14
FEBRUARY 1998
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT

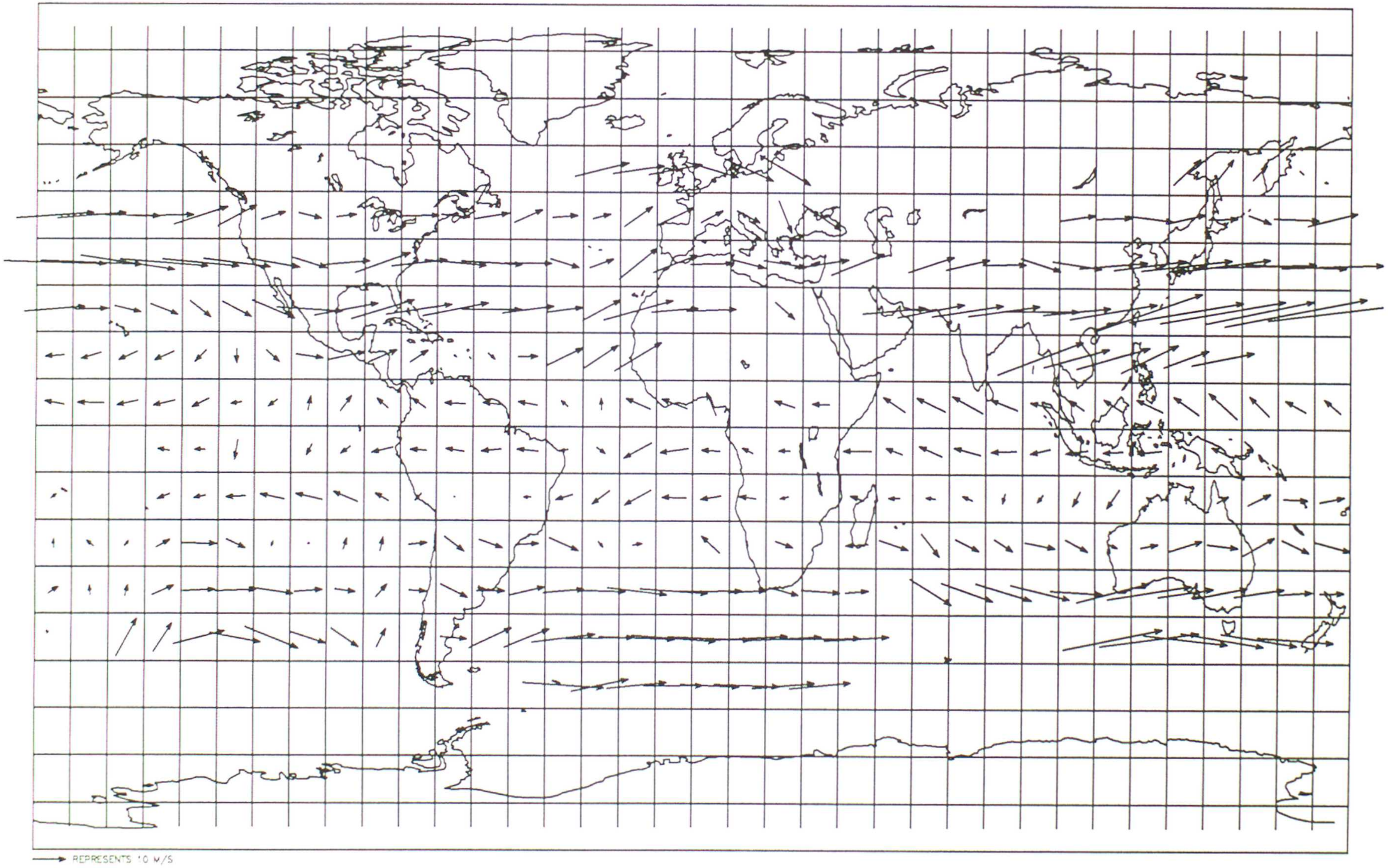

5 5 4 5 4 4 5 5 4 4 4 5 3 3 4
4 4 4 4 4 3 3 5 4 3 4 3 4 10 4 4 3 4 6
4 4 4 4 4 4 3 3 4 5 4 3 3 3 3 4 1 5 12 9 8 10 7 4 4 3 3 3 4
4 4 3 3 4 3 3 4 6 3 4 4 3 4 5 6 8 8 7 5 7 7 6 6 5 3 3 3 3 3
5 4 4 3 3 4 4 5 8 6 10 4 4 4 4 3 7 7 7 7 6 5 4 8 5 3 3 3 3 3
4 6 6 6 4 3 3 4 5 4 6 3 4 3 2 10 10 10 7 7 5 8 6 7 4 4 5 4 4
4 5 5 5 3 3 3 3 4 5 6 3 3 17 9 9 6 6 5 6 6 5 4 3 3 3 3
3 3 3 4 5 4 3 3 3 3 4 6 6 5 4 8 7 7 6 5 5 6 3 3 3
3 3 4 4 4 4 4 4 4 3 3 4 4 4 4 10 7 7 7 5 5 4 4 4 4 4 3 4
8 6 5 4 4 4 5 5 5 4 5 4 6 5 4 5 4 4 3 3 4 4 4 10

AVERAGE DAILY NUMBER OF SATOB OBSERVATIONS BETWEEN 401 AND 700 HPA FIGURE 15
FEBRUARY 1998

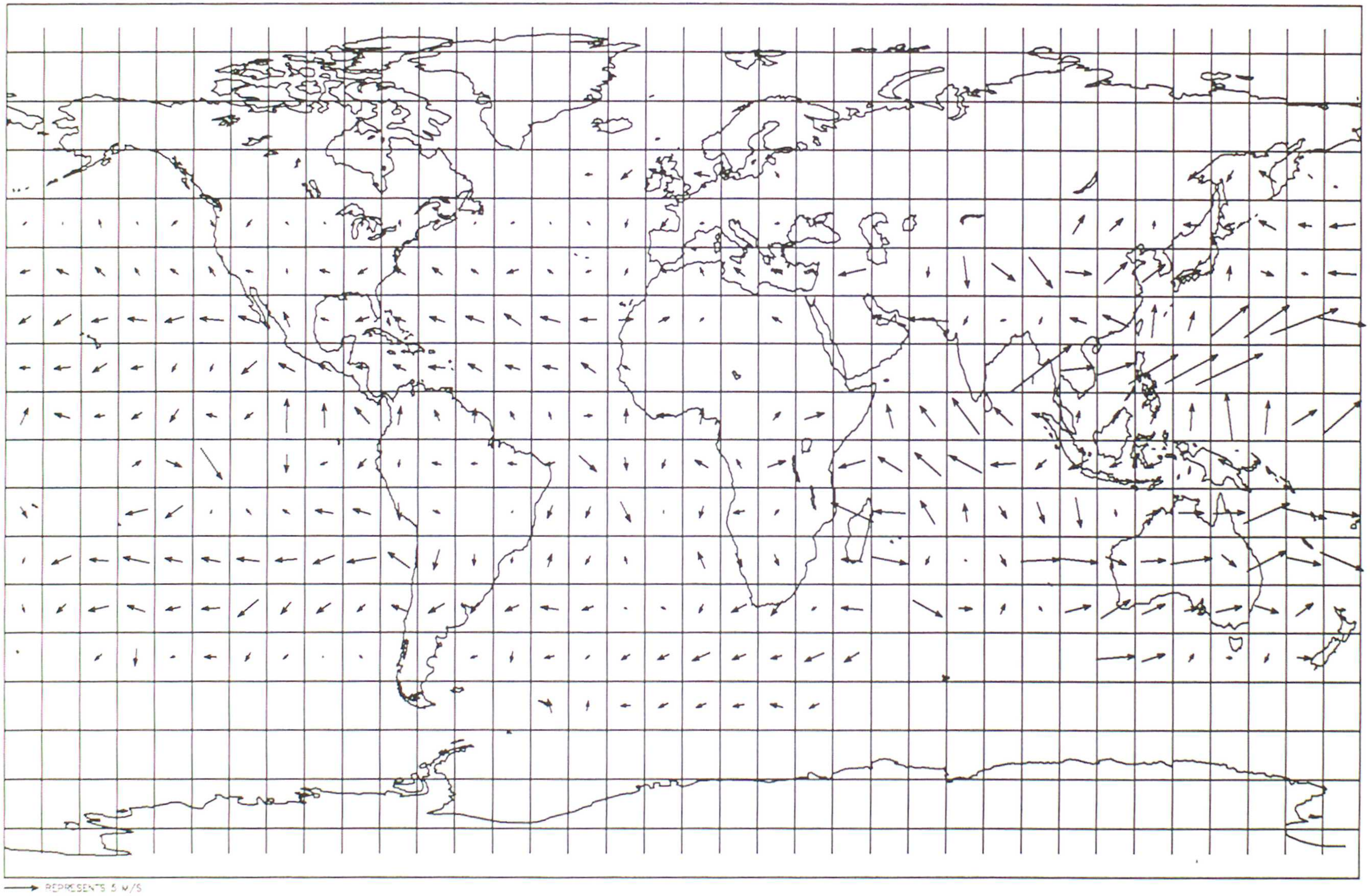

0 0 0
9 10 9 12 13 14 8 7 7 3 3 4 8 5 0 0 1 3 2 3 3 3 3 1
7 11 13 15 17 14 12 13 15 9 9 24 24 11 13 7 0 0 2 1 3 4 3 2 2 1 1 1 2
7 10 17 23 23 17 18 13 17 13 16 23 24 21 15 6 0 0 1 1 2 2 3 4 5 1 1 1 1 1 1
10 18 22 30 31 31 30 19 6 7 6 10 9 9 8 4 0 0 0 0 0 1 1 1 0 1 1 0 0 0
3 2 3 4 6 3 3 4 2 2 2 4 8 6 8 2 0 0 2 2 1 3 3 3 2 2 1 1 1 1 1
1 0 0 1 1 2 0 2 2 1 2 1 3 4 3 1 0 1 4 10 11 8 7 0 4 2 0 0 0 0 0
2 1 1 1 2 6 12 22 19 7 2 1 1 2 2 1 0 1 4 6 5 3 3 2 2 1 1 0 0 1
9 10 6 4 3 2 6 17 30 27 8 8 4 2 1 2 0 0 1 5 5 4 3 1 1 1 1 0 1 1 1
5 6 10 9 9 11 9 7 10 7 4 4 5 6 5 3 0 0 2 3 4 4 2 1 1 1 1 1 2 3
0 1 1 1 2 6 4 3 2 2 2 2 4 4 3 0 0 1 3 2 3 2 1 0

SATOB VECTOR MEAN WINDS BETWEEN 401–700 HPA
FEBRUARY 1998
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

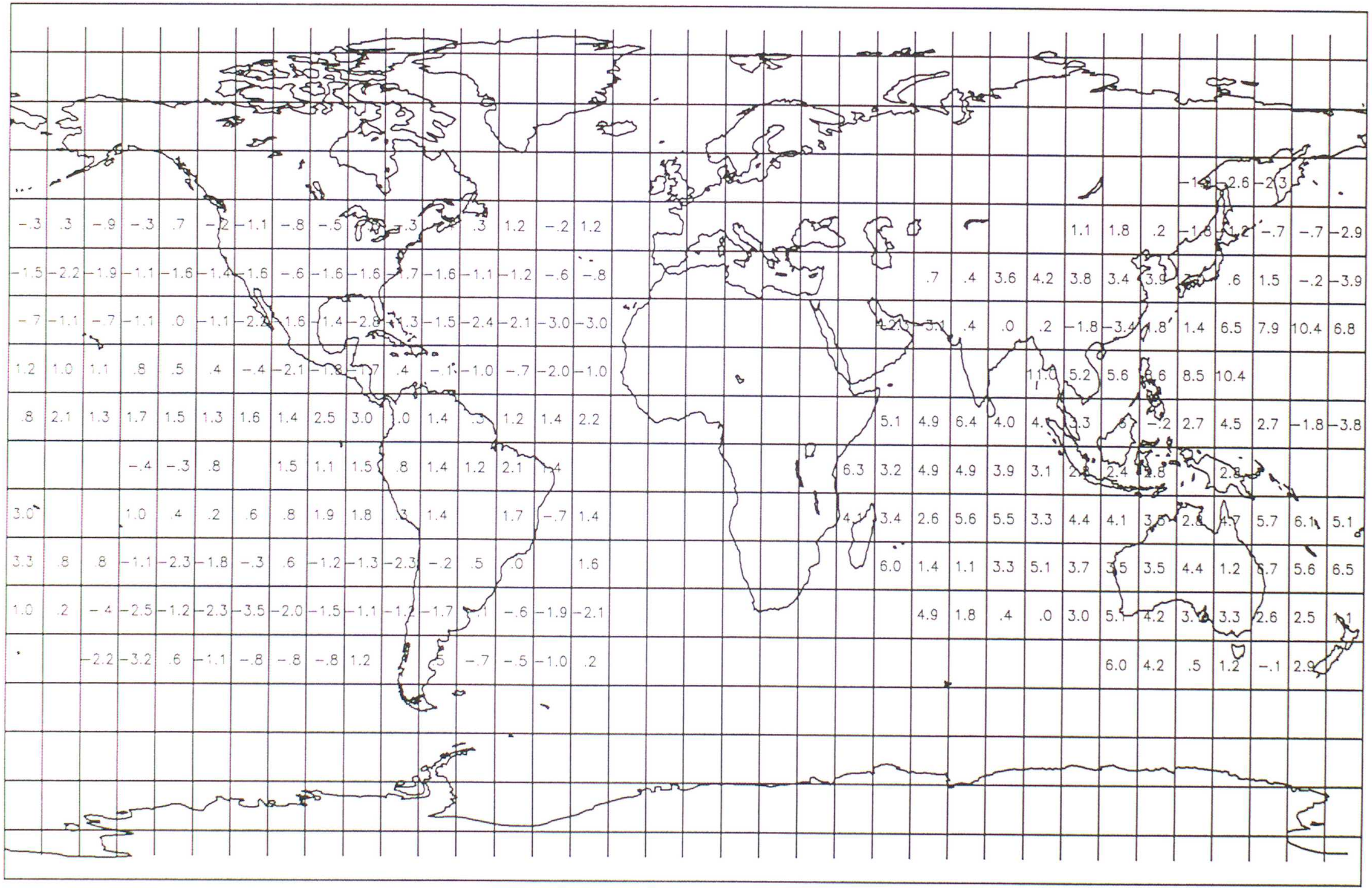
FIGURE 16


REPRESENTS 10 M/S

SATOB O-B VECTOR WIND DIFFERENCES BETWEEN 401-700 HPA FIGURE 17
FEBRUARY 1998
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

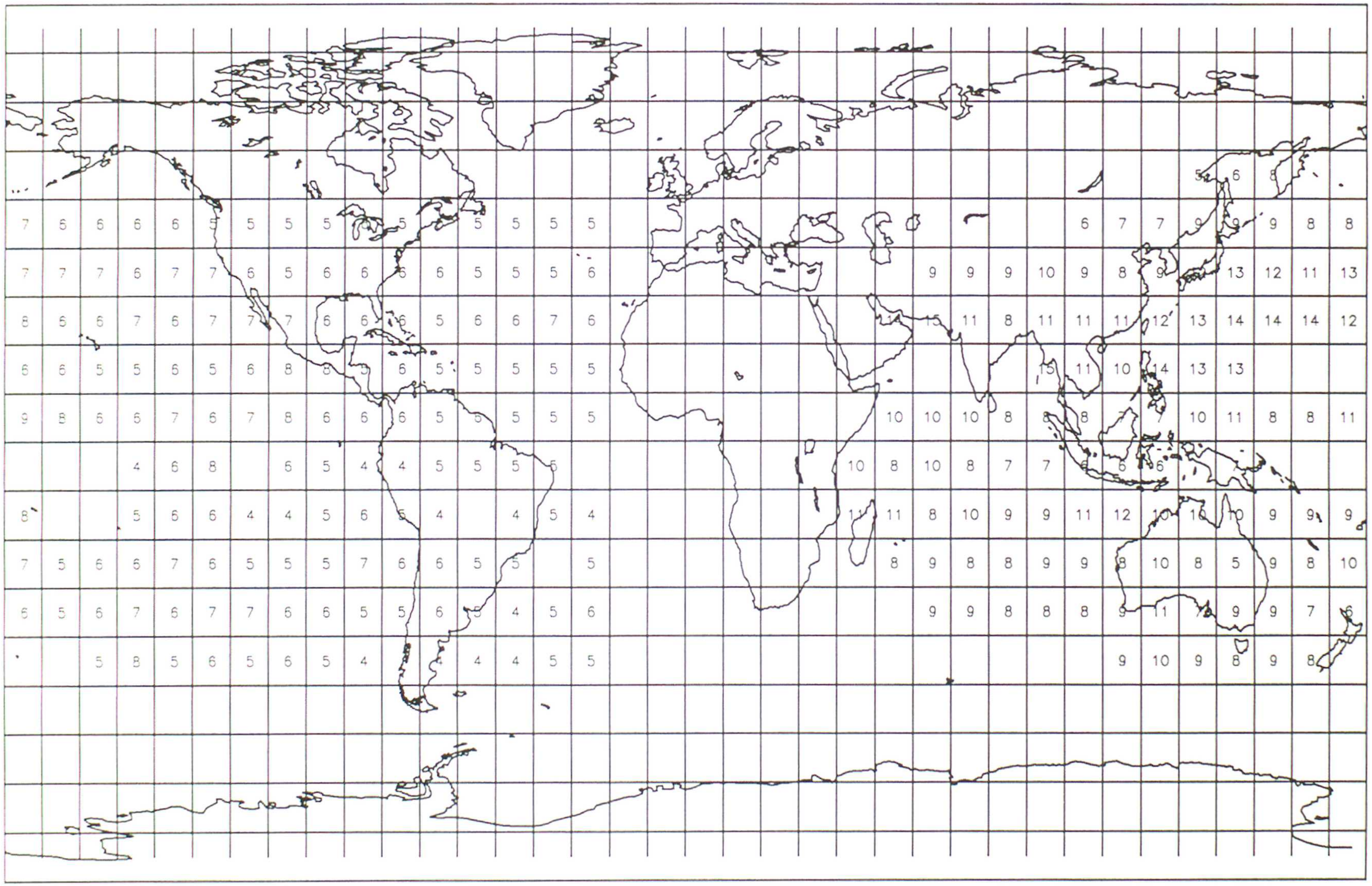


SATOBS : MEAN O–B SPEED DIFFERENCES (M/S) BETWEEN 401 AND 700 HPA FIGURE 18
FEBRUARY 1998
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT

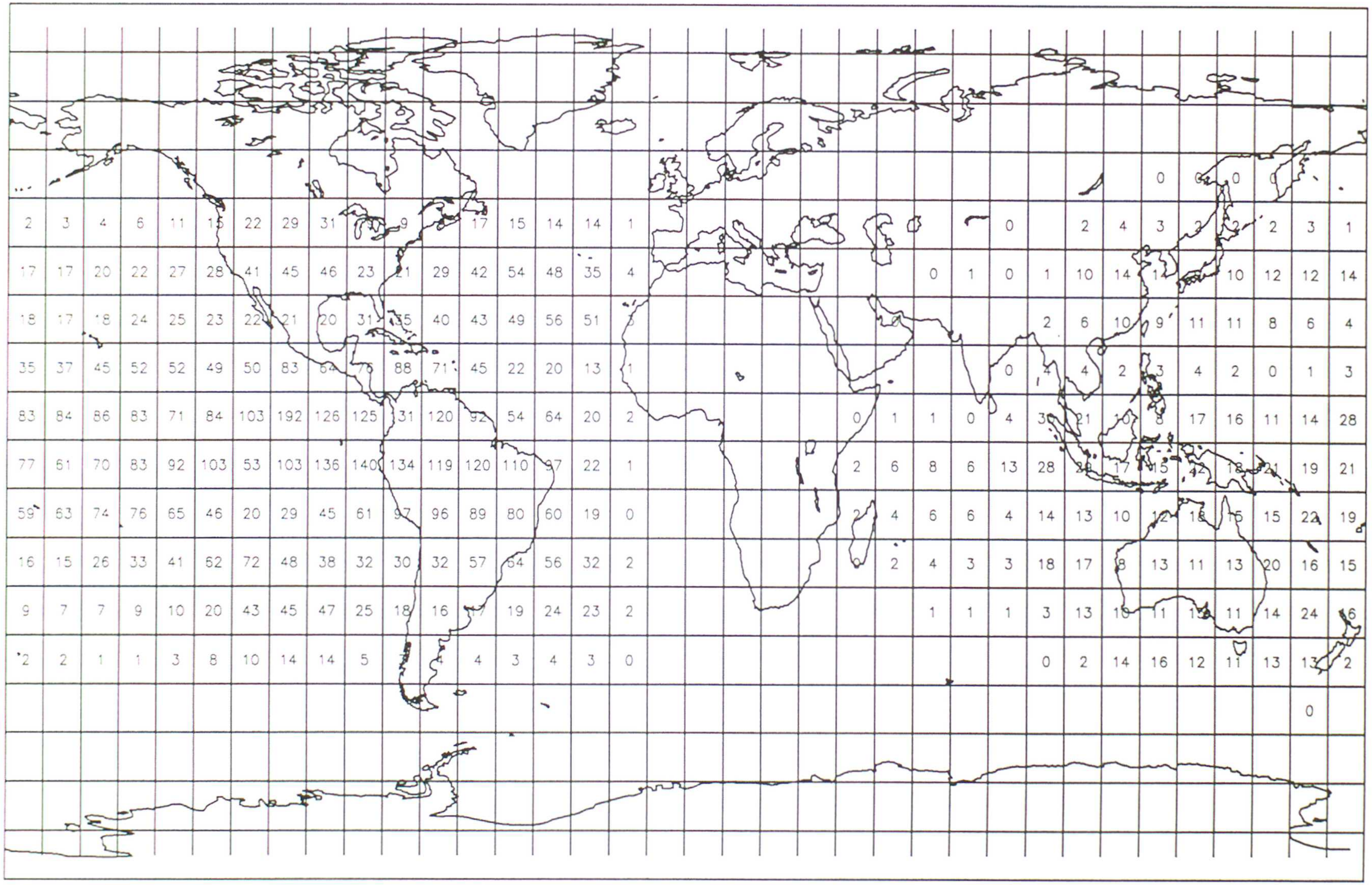


2.6 –2.3
–.3 .3 –.9 –.3 .7 –.2 –1.1 –.8 –.5 .3 .3 1.2 –.2 1.2 1.1 1.8 .2 –1.8 –1.2 –.7 –.7 –2.9
–1.5 –2.2 –1.9 –1.1 –1.6 –1.4 –1.6 –.6 –1.6 –1.6 –1.7 –1.6 –1.1 –1.2 –.6 –.8 .7 .4 3.6 4.2 3.8 3.4 3.9 .6 1.5 –.2 –3.9
–.7 –1.1 –.7 –1.1 .0 –1.1 –2.2 –1.6 –1.4 –2.8 –1.3 –1.5 –2.4 –2.1 –3.0 –3.0 –3.1 .4 .0 .2 –1.8 –3.4 1.8 1.4 6.5 7.9 10.4 6.8
1.2 1.0 1.1 .8 .5 .4 –.4 –2.1 –1.8 –1.7 .4 –.1 –1.0 –.7 –2.0 –1.0 11.0 5.2 5.6 8.6 8.5 10.4
.8 2.1 1.3 1.7 1.5 1.3 1.6 1.4 2.5 3.0 .0 1.4 1.2 1.4 2.2 5.1 4.9 6.4 4.0 3.3 –.2 2.7 4.5 2.7 –1.8 –3.8
–.4 –.3 .8 1.5 1.1 1.5 .8 1.4 1.2 2.1 6.3 3.2 4.9 4.9 3.9 3.1 2.4 2.8
3.0 1.0 .4 .2 .6 .8 1.9 1.8 1.4 1.7 –.7 1.4 3.4 2.6 5.6 5.5 3.3 4.4 4.1 5.7 6.1 5.1
3.3 .8 .8 –1.1 –2.3 –1.8 –.3 .6 –1.2 –1.3 –2.3 –.2 .5 .0 1.6 6.0 1.4 1.1 3.3 5.1 3.7 3.5 3.5 4.4 1.2 5.6 6.5
1.0 .2 –.4 –2.5 –1.2 –2.3 –3.5 –2.0 –1.5 –1.1 –1.2 –1.7 –.6 –1.9 –2.1 4.9 1.8 .4 .0 3.0 4.2 3.3 2.6 2.5
–2.2 –3.2 .6 –1.1 –.8 –.8 –.8 1.2 .5 –.7 –.5 –1.0 .2 6.0 4.2 .5 1.2 –.1 2.9

SATOBS : RMS O-B VECTOR DIFFERENCES (M/S) BETWEEN 401 AND 700 HPA FIGURE 19
FEBRUARY 1998
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT

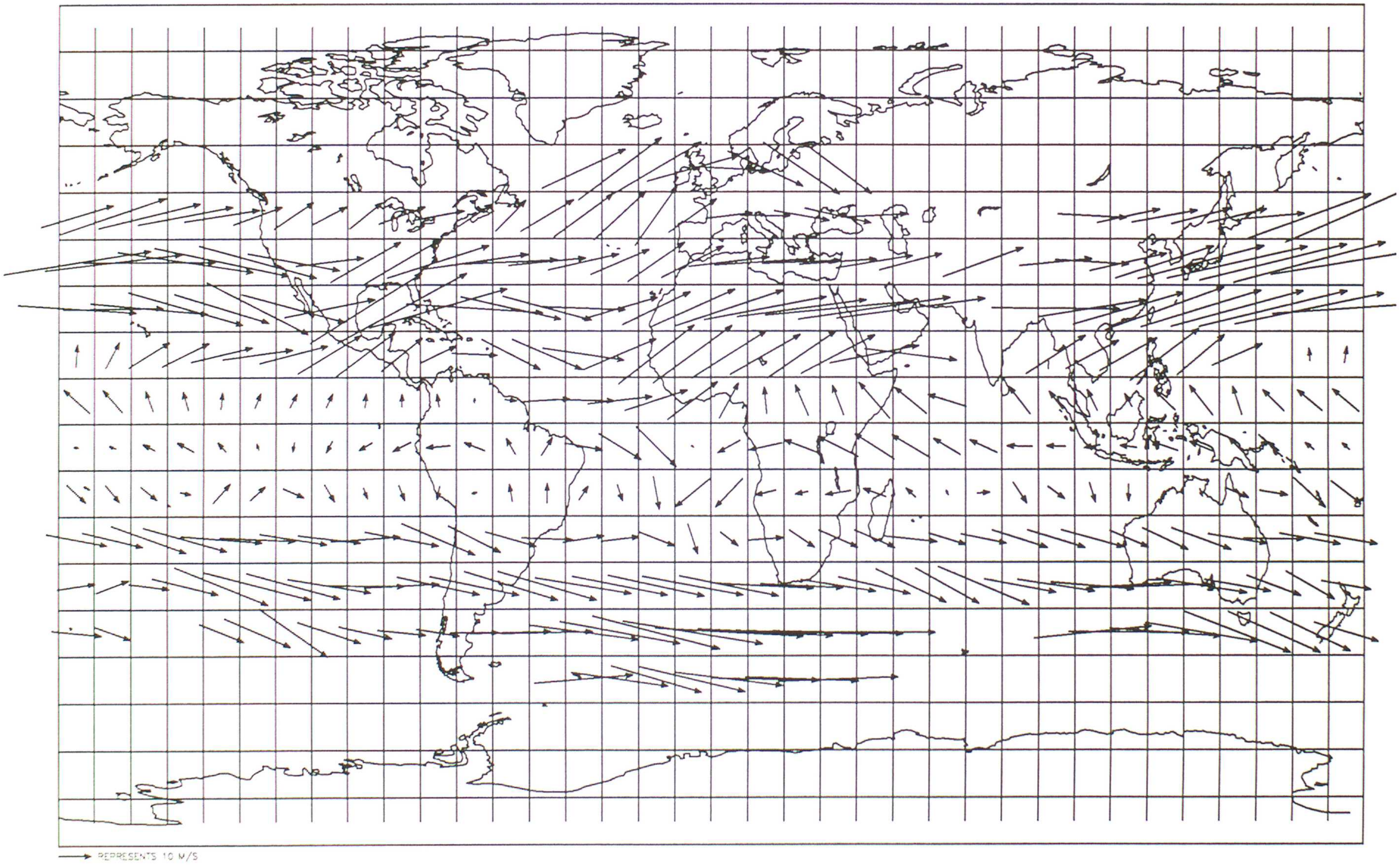

5 6 8
7 6 6 6 6 5 5 5 5 5 5 5 5 5 6 7 7 9 9 9 8 8
7 7 7 6 7 7 6 5 6 6 6 6 5 5 5 6 9 9 9 10 9 8 9 13 12 11 13
8 6 6 7 6 7 7 7 6 6 6 5 6 6 7 6 14 15 11 8 11 11 11 12 13 14 14 14 12
6 6 5 5 6 5 6 8 8 5 6 5 5 5 5 5 15 11 10 14 13 13
9 8 6 6 7 6 7 8 6 6 6 5 5 5 5 5 10 10 10 8 8 8 7 7 10 11 8 8 11
4 6 8 6 5 4 4 5 5 5 5 10 8 10 8 7 7 6 6 6 7
8 5 6 6 4 4 5 6 5 4 4 5 4 11 11 8 10 9 9 11 12 10 10 10 9 9 9
7 5 6 6 7 6 5 5 5 7 6 6 5 5 5 8 9 8 8 9 9 8 10 8 5 9 8 10
6 5 6 7 6 7 7 6 6 5 5 6 5 4 5 6 9 9 8 8 8 9 11 7 9 9 7 6
5 8 5 6 5 6 5 4 4 4 4 5 5 9 10 9 8 9 8

AVERAGE DAILY NUMBER OF SATOB OBSERVATIONS BETWEEN 101 AND 400 HPA FIGURE 20
FEBRUARY 1998


2 3 4 6 11 15 22 29 31 9 17 15 14 14 1
17 17 20 22 27 28 41 45 46 23 21 29 42 54 48 35 4
18 17 18 24 25 23 22 21 20 31 35 40 43 49 56 51 3
35 37 45 52 52 49 50 83 64 75 88 71 45 22 20 13 1
83 84 86 83 71 84 103 192 126 125 131 120 92 54 64 20 2
77 61 70 83 92 103 53 103 136 140 134 119 120 110 97 22 1
59 63 74 76 65 46 20 29 45 61 97 96 89 80 60 19 0
16 15 26 33 41 62 72 48 38 32 30 32 57 64 56 32 2
9 7 7 9 10 20 43 45 47 25 18 16 17 19 24 23 2
2 2 1 1 3 8 10 14 14 5 4 4 3 4 3 0
0 0 0 0
0 2 4 3 2 2 2 3 1
0 1 0 1 10 14 14 10 12 12 14
2 6 10 9 11 11 8 6 4
0 4 4 2 3 4 2 0 1 3
0 1 1 0 4 30 21 10 8 17 16 11 14 28
2 6 8 6 13 28 28 17 15 42 18 21 19 21
2 4 6 6 4 14 13 10 12 18 15 15 22 19
0 2 4 3 3 18 17 8 13 11 13 20 16 15
1 1 1 3 13 10 11 13 11 14 24 16
0 2 14 16 12 11 13 13 2
0

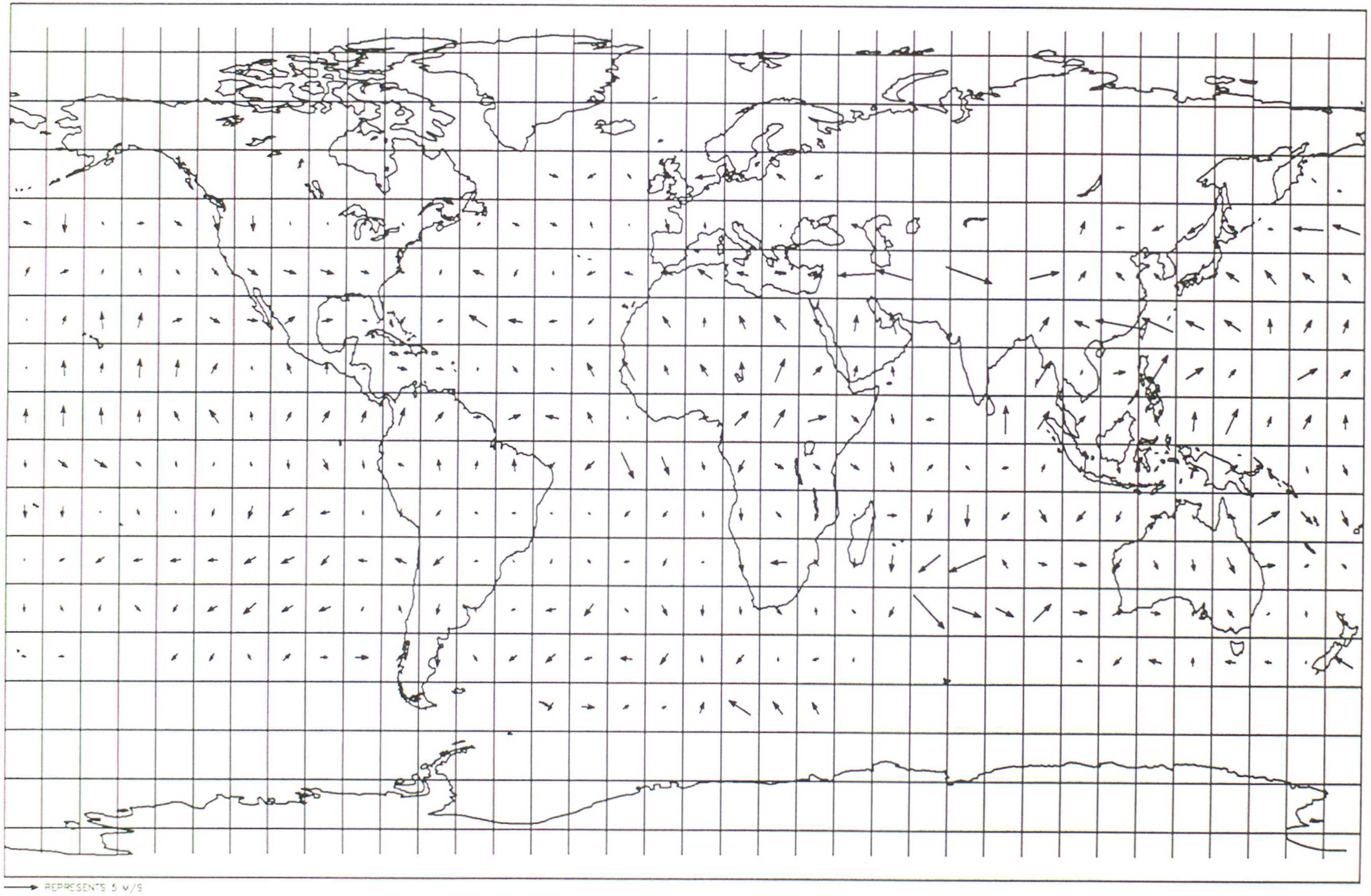
SATOB VECTOR MEAN WINDS BETWEEN 101–400 HPA
FEBRUARY 1998
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

FIGURE 21

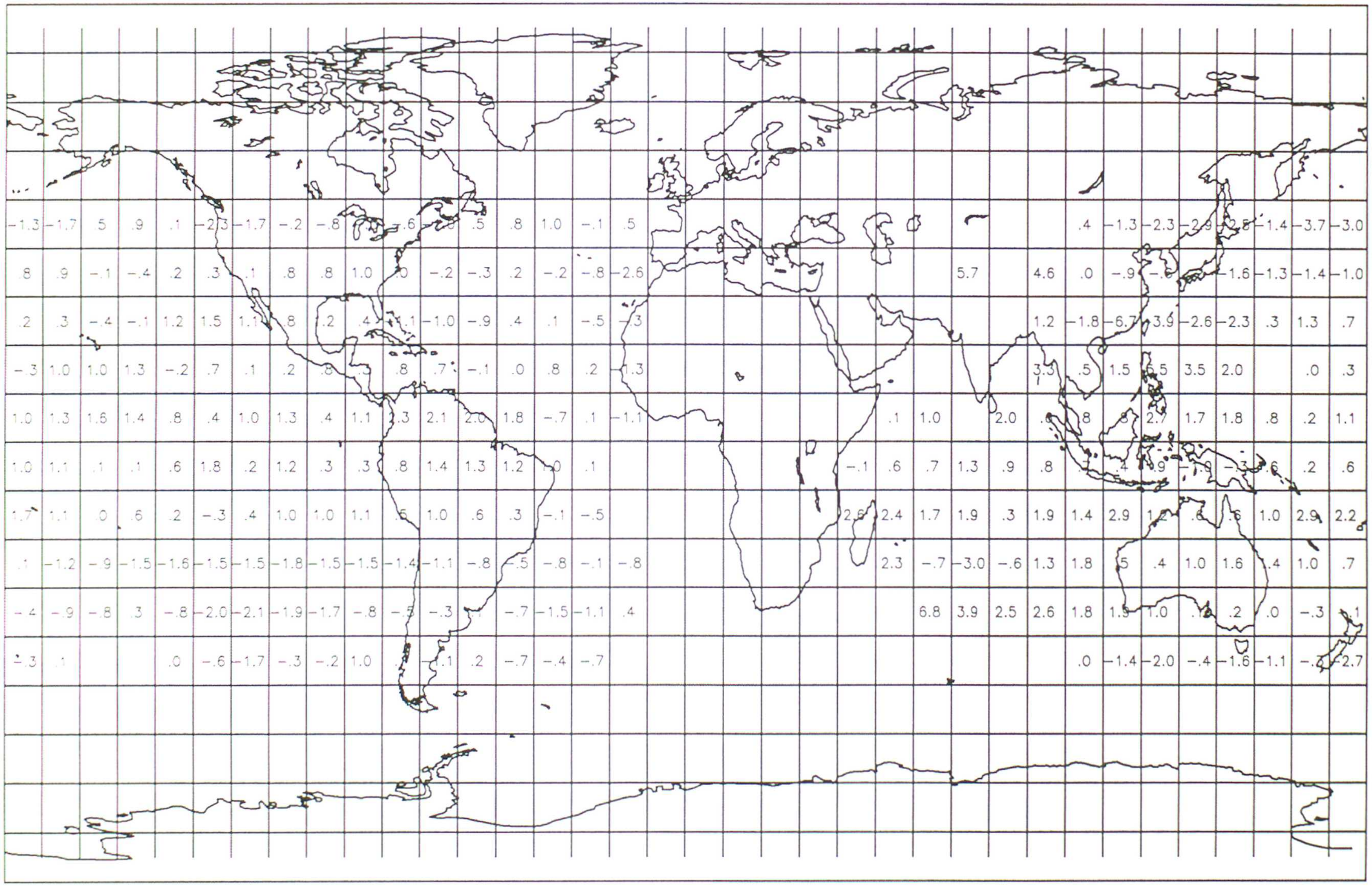

→ REPRESENTS 10 M/S

SATOB O-B VECTOR WIND DIFFERENCES BETWEEN 101-400 HPA
FEBRUARY 1998
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

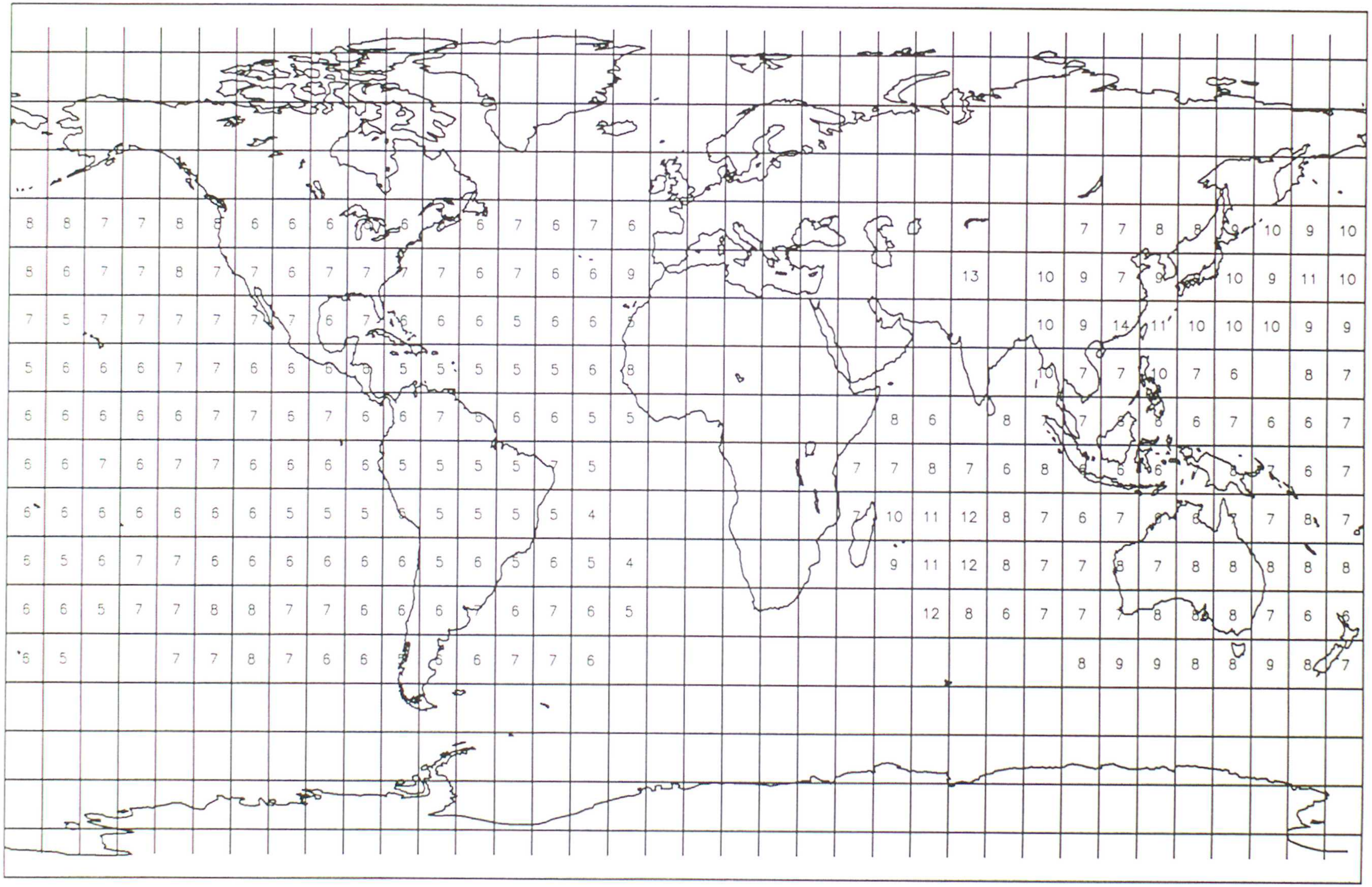
FIGURE 22



SATOBS : MEAN O–B SPEED DIFFERENCES (M/S) BETWEEN 101 AND 400 HPA FIGURE 23
FEBRUARY 1998
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


-1.3 -1.7 .5 .9 .1 -2.3 -1.7 -.2 -.8 -.6 .5 .8 1.0 -.1 .5 .4 -1.3 -2.3 -2.9 -2.8 -1.4 -3.7 -3.0
.8 .9 -.1 -.4 .2 .3 .1 .8 .8 1.0 .0 -.2 -.3 .2 -.2 -.8 -2.6 5.7 4.6 .0 -.9 -.6 -1.6 -1.3 -1.4 -1.0
.2 .3 -.4 -.1 1.2 1.5 1.1 .8 .2 .4 -1.1 -1.0 -.9 .4 .1 -.5 -.3 1.2 -1.8 -6.7 -3.9 -2.6 -2.3 .3 1.3 .7
-.3 1.0 1.0 1.3 -.2 .7 .1 .2 .8 .3 .8 .7 -.1 .0 .8 .2 -1.3 3.3 .5 1.5 6.5 3.5 2.0 .0 .3
1.0 1.3 1.6 1.4 .8 .4 1.0 1.3 .4 1.1 2.3 2.1 2.0 1.8 -.7 .1 -1.1 .1 1.0 2.0 .6 .8 .8 2.7 1.7 1.8 .8 .2 1.1
1.0 1.1 .1 .1 .6 1.8 .2 1.2 .3 .3 .8 1.4 1.3 1.2 1.0 .1 -.1 .6 .7 1.3 .9 .8 .7 .4 .9 -1.0 -.3 .6 .2 .6
1.7 1.1 .0 .6 .2 -.3 .4 1.0 1.0 1.1 .5 1.0 .6 .3 -.1 -.5 2.6 2.4 1.7 1.9 .3 1.9 1.4 2.9 1.2 .6 .6 1.0 2.9 2.2
.1 -1.2 -.9 -1.5 -1.6 -1.5 -1.5 -1.8 -1.5 -1.5 -1.4 -1.1 -.8 -.5 -.8 -.1 -.8 2.3 -.7 -3.0 -.6 1.3 1.8 .5 .4 1.0 1.6 .4 1.0 .7
-.4 -.9 -.8 .3 -.8 -2.0 -2.1 -1.9 -1.7 -.8 -.5 -.3 .1 -.7 -1.5 -1.1 .4 6.8 3.9 2.5 2.6 1.8 1.5 1.0 .1 .2 .0 -.3 .1
-.3 .1 .0 -.6 -1.7 -.3 -.2 1.0 .1 -1.1 .2 -.7 -.4 -.7 .0 -1.4 -2.0 -.4 -1.6 -1.1 -.3 -2.7

SATOBS : RMS O-B VECTOR DIFFERENCES (M/S) BETWEEN 101 AND 400 HPA FIGURE 24
FEBRUARY 1998
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


8 8 7 7 8 8 6 6 6 6 6 7 6 7 6 7 7 8 8 9 10 9 10
8 6 7 7 8 7 7 6 7 7 7 7 6 7 6 6 9 13 10 9 7 9 10 9 11 10
7 5 7 7 7 7 7 7 6 7 6 6 6 5 6 6 5 10 9 14 11 10 10 10 9 9
5 6 6 6 7 7 6 6 6 8 5 5 5 5 5 6 8 10 7 7 10 7 6 8 7
6 6 6 6 6 7 7 6 7 6 6 7 6 6 6 5 5 8 6 8 7 6 8 6 7 6 6 7
6 6 7 6 7 7 6 6 6 6 5 5 5 5 7 5 7 7 8 7 6 8 6 6 6 7 6 7
6 6 6 6 6 6 6 5 5 5 6 5 5 5 5 4 7 10 11 12 8 7 6 7 6 6 7 7 8 7
5 5 6 7 7 6 6 6 6 6 6 5 6 5 6 5 4 9 11 12 8 7 7 8 7 8 8 8 8 8
6 6 5 7 7 8 8 7 7 6 6 6 7 6 7 6 5 12 8 6 7 7 7 8 8 8 7 6 6
5 5 7 7 8 7 6 6 5 5 6 7 7 6 8 9 9 8 8 9 8 7

MONITORING OF SATELLITE TEMPERATURES

MONITORING CENTRE: BRACKNELL

MONTH: February, 1998

Monitoring procedures

Period	:One calendar month.
Data monitored	:Reports from NOAA-11, NOAA-14 500 km.
Standard of comparison	:Background field from Bracknell global model.
Selection Criteria	:All SATEM soundings where number of observations > 30.
Data Extracted	:Layer: 850 - 1000 hPa 100 - 300 hPa 30 - 50 hPa
	:Mean observation minus background temperature differences

NO DATA AVAILABLE

TABLE 8

MONTHLY MONITORING OF MARINE SURFACE OBSERVATIONS (COSNA)
DATA TYPE:- DRIFTER
MONITORING CENTRE: BRACKNELL
MONTH: February, 1998

Monitoring procedures

Period	:One calendar month.
Data monitored	:Reports from each unique identifier for drifting buoy.
Area monitored	:10°N - 80°N, 85°W - 0°W
Standard of comparison	:Background field from Bracknell global model.
Position	:Average latitude and longitude for period.
Observation times	:All hours combined.
Elements monitored	:Mean sea-level pressure (hPa) :Wind speed (m s^{-1}) :Wind direction (degrees)

Parameters monitored		
	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors. **N.B. A positive bias indicates the observation is veered to the background**
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors
GROSS ERROR LIMITS	:15 hPa (pressure) :25 m s^{-1} (Vector Wind)	

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
09802	45.9	-8.3	ALL	P	SUR	1	0	0	0.0	0.0	0.0
13903	26.1	-42.9	ALL	P	SUR	240	0	0	1.0	1.1	1.5
13906	24.9	-54.0	ALL	P	SUR	243	0	0	1.1	0.0	1.1
13910	27.4	-48.2	ALL	P	SUR	75	0	0	1.2	-2.1	2.4
13912	17.7	-61.8	ALL	P	SUR	242	0	0	1.3	0.7	1.5
13913	18.9	-53.4	ALL	P	SUR	240	0	0	1.1	0.2	1.1
41506	16.7	-59.5	ALL	P	SUR	383	0	0	1.0	0.6	1.2
41522	15.5	-56.4	ALL	P	SUR	17	0	0	0.9	4.1	4.2
41524	13.9	-55.3	ALL	P	SUR	386	0	0	1.0	0.7	1.2
41924	19.0	-44.1	ALL	P	SUR	228	0	0	1.0	-1.7	2.0
44609	53.2	-25.9	ALL	P	SUR	965	2	0	1.5	0.6	1.6
44610	45.0	-45.8	ALL	P	SUR	534	32	6	1.6	0.0	1.6
44614	55.8	-38.8	ALL	P	SUR	1113	8	1	1.8	0.3	1.9
44616	50.8	-30.7	ALL	P	SUR	915	4	0	1.6	0.5	1.7
44617	50.1	-34.6	ALL	P	SUR	855	4	0	1.5	-0.2	1.5
44621	56.2	-18.7	ALL	P	SUR	785	2	0	1.6	-0.4	1.6
44624	63.2	-13.5	ALL	P	SUR	1176	3	0	2.0	-0.1	2.0
44727	55.7	-30.9	ALL	P	SUR	1684	3	0	1.5	-0.2	1.5
44728	63.7	-26.5	ALL	P	SUR	1025	369	36	1.6	0.2	1.6
44742	39.4	-9.4	ALL	P	SUR	237	2	1	1.0	-3.5	3.6
44760	33.7	-37.9	ALL	P	SUR	274	0	0	1.2	-0.3	1.2
44761	56.0	-37.2	ALL	P	SUR	817	6	1	2.0	0.5	2.0
44762	38.3	-11.3	ALL	P	SUR	572	1	0	1.1	-0.1	1.1
44763	46.0	-44.6	ALL	P	SUR	415	3	1	1.9	0.1	1.9
44765	58.5	-45.2	ALL	P	SUR	762	3	0	2.0	-0.1	2.0
44766	51.0	-35.2	ALL	P	SUR	830	9	1	2.1	0.3	2.1
44768	59.9	-19.5	ALL	P	SUR	1278	3	0	1.8	0.1	1.8
44769	55.1	-10.4	ALL	P	SUR	1101	5	0	1.2	0.2	1.2
44771	52.7	-28.8	ALL	P	SUR	837	6	1	1.8	0.6	1.9
44773	59.2	-28.1	ALL	P	SUR	1238	4	0	1.5	-0.1	1.5
44775	60.1	-32.6	ALL	P	SUR	1295	3	0	1.7	0.2	1.7
44780	53.4	-30.2	ALL	P	SUR	1004	10	1	1.4	0.0	1.4
44825	40.3	-73.2	ALL	P	SUR	1	0	0	0.0	-0.6	0.6
44834	50.3	-46.1	ALL	P	SUR	72	0	0	1.2	0.4	1.3
44901	54.4	-49.1	ALL	P	SUR	103	1	1	1.4	0.9	1.7
44911	59.4	-8.3	ALL	P	SUR	33	0	0	1.1	0.6	1.2
44912	52.1	-22.9	ALL	P	SUR	88	0	0	1.5	1.1	1.9
44925	60.3	-55.0	ALL	P	SUR	58	1	2	4.2	0.7	4.3
49800	21.4	-23.5	ALL	P	SUR	1	0	0	0.0	1.3	1.3
49802	17.9	-21.7	ALL	P	SUR	10	0	0	1.2	2.0	2.3
51633	24.6	-81.2	ALL	P	SUR	36	0	0	0.9	0.3	1.0
51634	24.2	-84.0	ALL	P	SUR	30	0	0	1.0	0.0	1.0
59802	49.5	-13.1	ALL	P	SUR	1	0	0	0.0	-0.7	0.7
61556	26.1	-83.0	ALL	P	SUR	31	0	0	0.9	0.5	1.0
61557	24.4	-83.4	ALL	P	SUR	29	0	0	1.1	0.6	1.2
62519	49.6	-16.5	ALL	P	SUR	504	0	0	1.3	0.4	1.4
62551	46.7	-17.0	ALL	P	SUR	532	0	0	1.1	0.6	1.3
62552	59.9	-4.6	ALL	P	SUR	318	0	0	2.1	-1.1	2.4
62553	53.6	-21.5	ALL	P	SUR	698	5	1	1.5	0.3	1.6
62554	59.0	-4.4	ALL	P	SUR	494	0	0	1.5	0.0	1.5
62555	42.6	-11.4	ALL	P	SUR	35	1	3	2.3	0.3	2.3
62557	47.7	-13.8	ALL	P	SUR	1115	94	8	1.4	0.5	1.5
62558	54.3	-12.4	ALL	P	SUR	1173	63	5	2.4	0.5	2.5
62581	50.5	-13.3	ALL	P	SUR	1	0	0	0.0	-1.9	1.9
62673	58.5	-29.8	ALL	P	SUR	402	0	0	1.3	-0.2	1.4
62674	58.5	-26.1	ALL	P	SUR	407	0	0	1.4	-0.2	1.4
62697	51.4	-15.3	ALL	P	SUR	752	1	0	1.3	0.1	1.3
62751	45.8	-19.5	ALL	P	SUR	177	0	0	1.8	0.2	1.8
62755	43.9	-18.3	ALL	P	SUR	148	0	0	1.1	0.3	1.1
62758	42.7	-18.6	ALL	P	SUR	173	0	0	1.1	0.2	1.1

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
62927	57.4	-8.0	ALL	P	SUR	76	20	26	2.2	-0.1	2.2
62929	57.3	-33.7	ALL	P	SUR	37	0	0	2.7	1.5	3.1
64528	57.6	-29.8	ALL	P	SUR	1682	2	0	1.5	-0.5	1.6
64530	60.2	-53.4	ALL	P	SUR	1156	8	1	1.5	0.5	1.5
64552	63.6	-33.2	ALL	P	SUR	955	6	1	1.9	0.5	2.0
64561	53.7	-20.6	ALL	P	SUR	902	3	0	1.5	0.0	1.5
64563	55.4	-41.9	ALL	P	SUR	1428	3	0	1.6	-0.7	1.7
64845	59.2	-11.7	ALL	P	SUR	1	0	0	0.0	1.5	1.5
65562	59.9	-28.4	ALL	P	SUR	1350	1	0	1.5	-0.2	1.5
65591	59.9	-35.4	ALL	P	SUR	809	6	1	1.7	-0.3	1.7
65592	60.7	-33.8	ALL	P	SUR	1374	2	0	1.7	-0.5	1.8
65594	64.1	-32.5	ALL	P	SUR	1923	10	1	1.9	-0.1	1.9
65596	49.9	-36.7	ALL	P	SUR	41	1	2	2.7	-1.7	3.2
65597	52.3	-35.4	ALL	P	SUR	1242	1	0	1.6	-0.6	1.7
WIND SPEED											
09802	45.9	-8.3	ALL	SPEED	SUR	1	0	0	0.0	1.6	1.6
41506	16.7	-59.5	ALL	SPEED	SUR	331	5	2	4.3	-2.0	4.7
41522	15.5	-56.4	ALL	SPEED	SUR	22	0	0	2.0	3.9	4.4
41523	14.1	-56.0	ALL	SPEED	SUR	258	0	0	1.5	0.3	1.5
41524	13.9	-55.3	ALL	SPEED	SUR	294	0	0	2.2	0.4	2.2
44609	53.2	-25.9	ALL	SPEED	SUR	769	82	11	7.3	1.4	7.4
44610	45.0	-45.8	ALL	SPEED	SUR	372	4	1	5.1	1.7	5.4
44617	50.1	-34.6	ALL	SPEED	SUR	1	0	0	0.0	28.0	28.0
44621	56.2	-18.7	ALL	SPEED	SUR	445	2	0	2.6	-1.1	2.8
44624	63.2	-13.5	ALL	SPEED	SUR	908	2	0	3.4	-4.8	5.9
44762	38.3	-11.3	ALL	SPEED	SUR	574	0	0	2.1	-1.0	2.3
44766	51.0	-35.2	ALL	SPEED	SUR	1	0	0	0.0	0.9	0.9
44773	59.2	-28.1	ALL	SPEED	SUR	1446	3	0	2.9	-1.5	3.3
44825	40.3	-73.2	ALL	SPEED	SUR	1	0	0	0.0	1.6	1.6
49800	21.4	-23.5	ALL	SPEED	SUR	2	0	0	0.0	0.9	0.9
49802	17.9	-21.7	ALL	SPEED	SUR	15	0	0	2.2	1.9	2.9
52674	58.3	-28.3	ALL	SPEED	SUR	2	0	0	0.0	-5.8	5.8
59802	49.5	-13.1	ALL	SPEED	SUR	2	0	0	0.0	-3.5	3.5
62551	46.7	-17.0	ALL	SPEED	SUR	372	0	0	2.3	0.2	2.3
62552	59.9	-4.6	ALL	SPEED	SUR	341	0	0	2.3	-0.5	2.4
62553	53.6	-21.5	ALL	SPEED	SUR	772	0	0	2.5	-0.9	2.6
62557	47.7	-13.8	ALL	SPEED	SUR	2	1	50	0.0	0.9	0.9
62558	54.3	-12.4	ALL	SPEED	SUR	2	2	100	0.0	0.0	0.0
62567	45.7	-13.5	ALL	SPEED	SUR	641	0	0	1.4	0.2	1.4
62581	50.5	-13.3	ALL	SPEED	SUR	1	0	0	0.0	0.5	0.5
62673	58.5	-29.8	ALL	SPEED	SUR	511	0	0	3.9	-3.0	5.0
62674	58.5	-26.1	ALL	SPEED	SUR	530	0	0	4.0	-4.2	5.8
62697	51.4	-15.3	ALL	SPEED	SUR	585	0	0	3.3	-8.2	8.8
62751	45.8	-19.5	ALL	SPEED	SUR	655	0	0	2.2	-0.4	2.3
62753	44.3	-18.3	ALL	SPEED	SUR	634	0	0	1.9	-0.1	1.9
62755	43.9	-18.3	ALL	SPEED	SUR	569	0	0	1.8	0.1	1.8
62756	44.8	-17.8	ALL	SPEED	SUR	629	0	0	1.8	-0.4	1.8
62757	44.5	-17.5	ALL	SPEED	SUR	652	0	0	2.9	-0.8	3.0
62758	42.7	-18.6	ALL	SPEED	SUR	704	0	0	1.7	-0.2	1.7
62759	43.7	-18.2	ALL	SPEED	SUR	644	0	0	1.6	0.3	1.7
64528	57.6	-29.8	ALL	SPEED	SUR	1	1	100	0.0	0.0	0.0
64552	63.6	-33.2	ALL	SPEED	SUR	1	0	0	0.0	1.3	1.3
64845	59.2	-11.7	ALL	SPEED	SUR	1	0	0	0.0	-0.1	0.1
WIND DIRECTION											
09802	45.9	-8.3	ALL	DIRN.	SUR	1	0	0	0.0	4.1	4.1
41506	16.7	-59.5	ALL	DIRN.	SUR	84	5	6	15.7	5.0	16.5
41522	15.5	-56.4	ALL	DIRN.	SUR	8	0	0	61.2	-32.8	69.5
41523	14.1	-56.0	ALL	DIRN.	SUR	136	0	0	18.2	-0.1	18.2
41524	13.9	-55.3	ALL	DIRN.	SUR	125	0	0	18.6	-10.8	21.5

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
WIND DIRECTION											
44609	53.2	-25.9	ALL	DIRN.	SUR	657	82	12	31.9	1.8	31.9
44610	45.0	-45.8	ALL	DIRN.	SUR	296	4	1	21.8	-6.9	22.9
44621	56.2	-18.7	ALL	DIRN.	SUR	705	2	0	18.7	-9.2	20.8
44624	63.2	-13.5	ALL	DIRN.	SUR	522	2	0	21.6	8.2	23.1
44762	38.3	-11.3	ALL	DIRN.	SUR	249	0	0	19.2	-7.9	20.7
44773	59.2	-28.1	ALL	DIRN.	SUR	1010	3	0	22.9	3.2	23.1
44825	40.3	-73.2	ALL	DIRN.	SUR	1	0	0	0.0	-12.8	12.8
49802	17.9	-21.7	ALL	DIRN.	SUR	5	0	0	38.0	-20.4	43.2
62551	46.7	-17.0	ALL	DIRN.	SUR	262	0	0	25.7	8.3	27.0
62552	59.9	-4.6	ALL	DIRN.	SUR	283	0	0	15.7	2.5	15.9
62553	53.6	-21.5	ALL	DIRN.	SUR	627	0	0	13.1	1.0	13.2
62557	47.7	-13.8	ALL	DIRN.	SUR	1	1	100	0.0	0.0	0.0
62558	54.3	-12.4	ALL	DIRN.	SUR	2	2	100	0.0	0.0	0.0
62567	45.7	-13.5	ALL	DIRN.	SUR	328	0	0	15.0	3.0	15.3
62581	50.5	-13.3	ALL	DIRN.	SUR	1	0	0	0.0	11.3	11.3
62673	58.5	-29.8	ALL	DIRN.	SUR	280	0	0	17.8	2.3	17.9
62674	58.5	-26.1	ALL	DIRN.	SUR	290	0	0	16.2	-1.3	16.2
62751	45.8	-19.5	ALL	DIRN.	SUR	401	0	0	28.9	-4.5	29.2
62753	44.3	-18.3	ALL	DIRN.	SUR	371	0	0	13.1	3.6	13.6
62755	43.9	-18.3	ALL	DIRN.	SUR	317	0	0	15.7	2.0	15.8
62756	44.8	-17.8	ALL	DIRN.	SUR	371	0	0	36.1	11.5	37.9
62757	44.5	-17.5	ALL	DIRN.	SUR	322	0	0	13.5	2.0	13.6
62758	42.7	-18.6	ALL	DIRN.	SUR	318	0	0	12.8	-7.8	15.0
62759	43.7	-18.2	ALL	DIRN.	SUR	389	0	0	17.3	-10.9	20.4
64528	57.6	-29.8	ALL	DIRN.	SUR	1	1	100	0.0	0.0	0.0
64845	59.2	-11.7	ALL	DIRN.	SUR	1	0	0	0.0	12.2	12.2

TABLE 9

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: February, 1998

Monitoring procedures:

Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :40°N - 70°N, 60°W - 0°W.

Standard of comparison :Background field from Bracknell global model.

Observation times :All hours combined.

Level(s) monitored :300.0 - 150.0 hPa

Elements monitored :TEMP in °C ; WIND in $m\ s^{-1}$

Parameters monitored

:N REP.	:Number of observations received excluding duplicates.
:PG	:Percentage of observations with gross errors.
:PR	:Percentage of observations rejected by quality control including rejections from the duplicate check.
:PC	:Percentage of observations with calm winds.
:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.
:BIAS	:Mean difference of observations from background values excluding those with gross errors in Temperature & vector wind.

GROSS ERROR LIMITS :10.0 °C ; 60 $m\ s^{-1}$ Vector Wind

SELECTION CRITERIA :N REP > 20

NB: US ACARs and ADS data are shown at the bottom of the table as US ACAR and ADS respectively.

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAL	2690	1	23	1.9	-0.2	4256	0	6	0	8.7	0.5
ACA	965	0	10	2.0	-0.2	1793	0	3	0	7.5	0.3
AEA	240	2	56	2.9	1.3	433	0	12	0	9.2	1.0
AEL	430	1	6	1.4	-0.4	848	0	3	0	8.9	0.8
AEY	37	3	5	1.5	0.7	73	0	1	0	7.0	0.9
AFL	282	0	5	1.9	0.1	536	0	2	0	9.7	0.4
AFR	1281	1	16	1.7	0.1	2467	0	8	0	8.4	0.6
AIH	154	2	8	1.8	-0.1	289	0	2	0	9.5	0.3
AJM	31	0	13	1.3	-0.3	58	0	7	0	13.0	0.9
AMX	194	0	6	2.1	0.0	381	0	4	0	10.2	1.2
ANZ	209	0	3	2.1	-1.0	418	0	2	0	8.0	0.4
AOM	329	1	9	2.0	0.8	647	0	4	0	8.4	0.4
AUA	39	3	28	2.3	-0.6	57	0	5	0	6.8	0.3
AVA	117	0	4	1.8	0.1	232	0	3	0	8.4	0.6
AZA	335	3	27	2.1	0.0	540	0	8	0	9.5	0.8
BAL	383	1	19	1.7	-0.4	768	0	10	0	8.4	0.5
BAW	1167	1	23	1.9	-0.2	2062	0	9	0	7.5	0.6
BBB	60	0	20	2.3	-0.4	101	0	5	0	9.3	1.2
BWA	90	0	32	2.1	1.1	161	0	5	0	10.6	1.1
CDN	439	1	5	1.8	0.8	866	0	3	0	8.5	0.5
CFC	22	0	0	2.3	-0.5	42	0	2	0	9.7	-0.8
CFG	602	0	6	2.0	-1.0	1188	0	3	0	9.0	0.6
CKS	21	0	100	1.4	-0.5	43	0	5	0	7.6	1.3
CKT	56	2	11	1.5	0.2	109	0	5	0	10.5	1.4
CLX	255	0	5	2.0	-0.9	479	0	2	0	8.8	0.1
CMM	27	4	33	2.2	-0.3	34	0	12	0	10.6	0.8
COA	760	1	26	2.0	0.1	1181	0	9	0	12.0	1.5
CRL	236	1	7	1.4	0.2	462	0	4	0	9.9	1.0
CTB	158	3	8	1.6	0.2	302	0	2	0	10.8	0.3
CTM	48	0	17	2.9	-1.6	98	0	7	0	8.8	1.1
CUB	268	1	6	2.0	0.9	516	0	50	0	10.5	0.8
DAL	1827	1	28	2.0	-0.3	2745	0	9	0	8.9	0.6
DBY	89	0	2	1.5	-0.6	174	1	2	0	9.0	0.3
DHL	103	3	34	4.3	-2.9	165	1	7	0	9.3	0.7
DLH	1928	1	21	1.9	-0.1	3322	0	7	0	7.8	0.6
ELY	122	2	10	1.7	-0.2	245	0	5	0	10.8	0.7
EWW	90	2	13	2.7	1.5	161	0	3	0	10.8	-0.1
FDX	103	1	17	1.8	0.5	180	0	6	0	8.7	1.0
FFF	33	0	6	1.2	0.8	58	14	57	0	40.6	-0.6
FIN	207	0	16	2.4	0.6	356	0	4	0	8.1	0.2
HLF	107	1	22	1.9	-0.7	182	0	7	0	8.4	1.3
IBE	893	2	31	2.2	0.7	1600	0	13	0	9.7	0.9
ICE	517	1	27	2.1	-0.1	831	0	8	0	7.5	0.5
KLM	1797	0	15	1.9	-0.1	3262	0	5	0	8.1	0.5
LDA	216	0	23	1.8	-1.2	397	1	12	0	10.0	0.6
LDI	327	0	32	1.9	-0.2	563	0	13	0	8.5	0.8
LEI	154	1	18	1.6	0.2	262	0	6	0	10.5	0.5
LIB	149	0	5	2.0	0.7	300	0	4	0	11.1	0.5
LOT	184	1	20	2.2	-0.9	304	0	6	0	9.7	0.3
LTU	518	0	21	1.8	-0.1	880	0	6	0	7.6	0.5
MPD	42	0	5	2.5	0.8	84	0	2	0	9.4	0.5
MPH	566	0	10	1.8	-0.7	1048	0	3	0	8.1	0.6
NWA	1859	0	11	1.9	0.7	3338	0	3	0	8.8	0.5
OAL	69	1	33	2.7	2.1	94	0	9	0	8.0	1.0
PAC	42	5	14	2.3	0.3	81	0	5	0	10.0	0.2
RAM	40	3	8	2.4	-0.8	76	0	5	0	13.4	1.5
RCH	209	1	24	2.8	1.0	363	0	10	0	12.3	1.2
RJA	25	0	40	1.9	0.3	36	0	14	0	6.2	-0.2
RRR	47	2	21	2.3	-0.4	92	0	8	0	8.7	0.8

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
SAB	43	0	16	2.1	-0.2	74	0	3	0	5.0	0.1
SAS	987	0	1	1.8	-0.1	1960	0	1	0	7.4	0.3
SIA	64	0	3	2.2	-1.3	131	0	2	0	7.3	0.2
SLR	69	1	26	1.2	-0.3	138	0	22	0	10.3	0.7
SPP	130	0	32	2.5	0.1	206	0	12	0	11.2	1.1
SVA	95	0	8	1.8	-0.3	183	1	51	0	12.8	1.0
SWR	138	0	15	2.3	0.3	232	0	3	0	8.3	1.4
TAP	255	2	7	1.7	-0.2	499	0	3	0	9.5	1.2
THY	29	0	28	3.1	1.7	50	0	12	0	5.7	0.6
TOW	57	2	39	1.2	0.1	90	0	13	0	10.3	0.5
TWA	1083	1	31	2.1	-0.2	1553	0	10	0	9.4	0.7
UAL	1472	0	16	2.1	-0.3	2618	0	5	0	8.0	0.5
UNS	135	0	100	1.6	0.5	270	0	50	0	6.1	0.5
UPS	261	0	31	2.2	0.3	450	0	13	0	9.2	0.3
USA	227	1	26	2.0	0.5	368	0	35	0	9.9	0.6
VIR	257	0	10	1.8	-0.5	463	0	4	0	8.4	1.0
VKG	27	0	0	1.5	0.9	54	0	2	0	8.9	0.7
AR	21	14	38	2.4	2.2	42	0	17	0	8.1	2.3
BA	4184	0	0	1.4	0.4	8366	0	0	0	6.5	0.6
KL	3369	0	0	1.6	0.9	6738	0	0	0	6.5	0.4
LH	246	0	0	1.4	0.6	492	0	0	0	5.0	0.2
SV	132	0	0	1.3	0.5	264	0	0	0	6.4	0.7
N	268	4	17	2.5	0.4	472	0	5	0	8.2	0.5
ADS	166	0	1	1.1	0.0	332	0	8	0	4.0	0.2
US ACAR	9913	0	0	1.4	0.4	19826	0	0	0	6.8	0.5

TABLE 10

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: February, 1998

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from Bracknell global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:100 hPa.
Element monitored		:GEOPOTENTIAL HEIGHT in metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.1

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
DBBH	00	Z	100	4	0	4.4	9.4	-8.3
DBBH	12	Z	100	8	0	26.4	26.9	-5.3
FATU	00	Z	100	1	0	0.0	3.0	3.0
FATU	12	Z	100	1	0	0.0	18.0	-18.0
FNOR	00	Z	100	8	0	12.5	21.6	17.6
FNOR	12	Z	100	12	0	19.4	23.3	12.8
FNOU	00	Z	100	10	0	18.1	21.2	11.0
FNOU	12	Z	100	11	0	19.3	21.7	9.8
FNPH	00	Z	100	9	0	11.0	11.5	-3.2
FNPH	12	Z	100	10	0	18.9	18.9	0.5
FNRS	00	Z	100	11	0	14.5	16.7	-8.3
FNRS	12	Z	100	10	0	22.3	22.5	-2.9
JBOA	00	Z	100	1	0	0.0	35.0	35.0
JCCX	00	Z	100	1	0	0.0	20.0	-20.0
JGQH	00	Z	100	1	0	0.0	23.0	23.0
LDWR	00	Z	100	24	0	14.5	14.5	0.5
LDWR	12	Z	100	27	0	12.9	13.0	1.7
METEO-F	00	Z	100	1	0	0.0	28.0	28.0
OVYA2	00	Z	100	11	0	17.6	19.0	-7.0
OVYA2	12	Z	100	12	0	18.3	19.9	7.8
OXTS2	00	Z	100	12	0	18.3	18.6	-3.2
OXTS2	12	Z	100	10	0	21.7	29.4	19.9
UCKZ	00	Z	100	6	0	15.7	43.7	40.8
V2VM	00	Z	100	12	0	13.9	31.0	-27.7
V2VM	12	Z	100	17	0	17.9	36.2	-31.5
V2XM	00	Z	100	8	0	9.8	9.9	-1.8
V2XM	12	Z	100	9	0	56.8	57.6	9.4
WTEC	00	Z	100	9	0	19.3	32.9	-26.7
WTEC	12	Z	100	12	0	25.9	47.0	-39.3
WTEU	00	Z	100	1	0	0.0	21.0	21.0
03953	00	Z	100	24	0	17.1	20.0	-10.5
03953	12	Z	100	28	0	12.3	12.4	-1.6
04018	00	Z	100	24	1	14.0	14.2	2.4
04018	12	Z	100	27	0	54.3	59.0	23.1
04220	00	Z	100	9	0	14.7	19.4	12.7
04220	12	Z	100	7	0	9.0	15.9	13.1
04270	00	Z	100	23	0	19.4	19.9	4.2
04270	12	Z	100	23	0	17.4	17.6	3.0
04339	00	Z	100	22	0	18.3	19.5	6.9
04339	12	Z	100	24	0	14.9	15.2	3.0
04360	00	Z	100	25	0	17.9	17.9	0.8
04360	12	Z	100	26	0	17.9	18.8	5.9
08001	00	Z	100	20	1	14.5	15.5	-5.5
08001	12	Z	100	19	0	45.7	49.9	-19.9
08508	00	Z	100	7	0	11.2	13.8	8.1
08508	12	Z	100	17	0	18.3	21.2	10.6
08522	00	Z	100	1	0	0.0	7.0	-7.0
08522	12	Z	100	24	0	13.3	20.6	15.7
60020	00	Z	100	5	0	0.0	0.0	0.0
60020	12	Z	100	6	0	0.0	0.0	0.0
71600	00	Z	100	25	0	18.6	26.7	19.2
71600	12	Z	100	28	0	14.1	19.1	12.9
72201	00	Z	100	22	0	17.4	23.3	-15.5
72201	12	Z	100	23	0	19.2	27.6	-19.8
72402	00	Z	100	22	0	17.4	19.2	8.0
72402	12	Z	100	25	0	17.3	17.5	2.2
74494	00	Z	100	22	0	11.0	13.7	-8.2
74494	12	Z	100	23	0	12.7	17.9	-12.6
78016	00	Z	100	1	0	0.0	12.0	-12.0
78016	12	Z	100	19	0	13.9	14.4	3.6

TABLE 11

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: February, 1998

Monitoring procedures:

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from Bracknell global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:500 hPa.
Element monitored		:GEOPOTENTIAL HEIGHT in metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.1

```
 WMO    OBS                  NUM    NUM
IDENT  TIME  ELM   LEV       OBS   GROSS     SD     RMS     BIAS

      12    Z    500    1     0      0.0   12.0   12.0
CGDX    00    Z    500    1      0      0.0    10.0    10.0
DBBH    00    Z    500    4      0      4.7     9.7     8.5
DBBH    12    Z    500   14      0      9.7    12.3     7.6
FATU    00    Z    500    1      0      0.0     4.0    -4.0

FATU    12    Z    500    1      0      0.0     8.0    -8.0
FNOR    00    Z    500   10      0     16.4    20.7    12.6
FNOR    12    Z    500   12      0     12.7    20.5    16.1
FNOU    00    Z    500   10      0      8.3    18.6    16.6
FNOU    12    Z    500   11      0     12.4    22.3    18.5

FNPH    00    Z    500   10      0     14.1    14.1    -0.5
FNPH    12    Z    500   11      0     10.2    10.2    -0.7
FNRS    00    Z    500   12      0     11.2    13.0     6.6
FNRS    12    Z    500   14      0     17.2    17.8     4.4
JBOA    00    Z    500    1      0      0.0     7.0     7.0

JCCX    00    Z    500    1      0      0.0     4.0     4.0
JGQH    00    Z    500    1      0      0.0     6.0     6.0
LDWR    00    Z    500   24      0     21.2    22.3     6.7
LDWR    12    Z    500   27      0     20.4    20.4     0.0
METEO-F00     Z    500    1      0      0.0    15.0    15.0

OVYA2   00    Z    500   13      0      8.8    13.1    -9.6
OVYA2   12    Z    500   13      0     12.0    17.3   -12.5
OXTS2   00    Z    500   12      0     18.9    23.8    14.5
OXTS2   12    Z    500   10      0     17.0    18.9     8.1
SHIPBX  00    Z    500    2      0      0.0     2.0    -2.0

UCKZ    00    Z    500    6      0      9.7    18.3    15.5
V2VM    00    Z    500   12      0     10.2    16.8   -13.4
V2VM    12    Z    500   18      0     12.9    22.2   -18.0
V2XM    00    Z    500    9      0     13.0    13.6     3.8
V2XM    12    Z    500    9      0     47.6    51.1    18.6

WTEC    00    Z    500   17      0     15.0    20.3   -13.6
WTEC    12    Z    500   16      0     19.0    22.9   -12.7
WTEU    00    Z    500    2      0      2.0     5.4     5.0
XXBA    00    Z    500    1      0      0.0    29.0    29.0
XXBA    12    Z    500    2      0      9.0    10.3     5.0

03953   00    Z    500   26      0     12.2    16.0    10.3
03953   12    Z    500   28      0      9.0    13.7    10.4
04018   00    Z    500   25      1     14.6    16.5     7.6
04018   12    Z    500   28      0     20.1    23.9    12.9
04220   00    Z    500   25      0     22.2    22.2    -1.4

04220   12    Z    500   26      0     16.0    16.1    -1.8
04270   00    Z    500   25      0     15.4    16.0    -4.0
04270   12    Z    500   28      0     15.5    15.9    -3.6
04339   00    Z    500   24      0     21.5    23.8    10.3
04339   12    Z    500   25      0     15.2    15.9     4.8

04360   00    Z    500   25      0     17.6    18.3     5.2
04360   12    Z    500   27      0     17.9    17.9     0.7
08001   00    Z    500   23      0     11.4    13.2     6.6
08001   12    Z    500   27      0      9.7    10.7     4.7
08508   00    Z    500    8      0     10.8    12.9     7.1

08508   12    Z    500   24      0     15.8    21.0    13.8
08522   00    Z    500    1      0      0.0     6.0     6.0
08522   12    Z    500   27      0     13.8    20.4    15.0
60020   00    Z    500   25      0      9.3    10.9     5.6
60020   12    Z    500   26      0      9.8    11.5     5.9

71600   00    Z    500   25      0     13.2    19.2    14.0
71600   12    Z    500   28      0     10.5    12.7     7.3
72201   00    Z    500   24      0      8.1     9.3     4.4
72201   12    Z    500   25      0      9.5    11.3    -6.2
72402   00    Z    500   23      0      9.1     9.2    -1.5

72402   12    Z    500   27      0     11.2    14.9    -9.8
74494   00    Z    500   25      0     12.3    13.1     4.7
74494   12    Z    500   28      0     15.4    16.3    -5.3
78016   00    Z    500    1      0      0.0     3.0    -3.0
78016   12    Z    500   19      0     10.9    14.2     9.0
```

TABLE 12

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: February, 1998

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from selected radiosonde TEMPs.

Area monitored :0°N - 90°N, 100°W - 40°E

Standard of comparison :Background field from Bracknell global model.

Position :Average latitude and longitude for period.

Observation times :00, 12 UTC.

Level monitored :100 hPa.

Element monitored :VECTOR WIND in m s^{-1}

Parameters monitored

:NUM OBS :Number of observations available at level shown during period.

:NUM GROSS :Number of gross errors at level shown during period.

:UBIAS,VBIAS :Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.

:RMS :Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
DBBH	00	V	100	4	0	0	0.0	-3.4	1.3
DBBH	12	V	100	4	0	0	0.0	2.6	1.0
FATU	00	V	100	1	0	0	2.4	-0.2	-0.9
FATU	12	V	100	1	0	0	2.4	1.5	2.3
FNOR	00	V	100	6	0	0	2.4	-1.9	0.5
FNOR	12	V	100	9	0	0	2.4	0.3	0.1
FNOU	00	V	100	9	0	0	2.4	-2.4	0.9
FNOU	12	V	100	11	0	0	2.4	-1.0	0.8
FNPH	00	V	100	7	0	0	3.4	-1.1	1.0
FNPH	12	V	100	6	0	0	3.4	-0.8	3.2
FNRS	00	V	100	10	0	0	3.4	1.5	-1.0
FNRS	12	V	100	8	0	0	5.4	0.3	3.5
JBOA	00	V	100	1	0	0	5.4	-1.4	3.0
JCCX	00	V	100	1	0	0	5.4	-0.7	0.8
JGQH	00	V	100	1	0	0	5.4	1.8	0.6
LDWR	00	V	100	24	0	0	5.4	0.1	-2.0
LDWR	12	V	100	27	0	0	2.3	-0.6	-0.2
OVYA2	00	V	100	9	0	0	2.9	-0.6	-2.5
OVYA2	12	V	100	12	0	0	2.9	-0.2	-0.2
OXTS2	00	V	100	11	0	0	3.4	-0.5	0.2
OXTS2	12	V	100	9	0	0	2.8	-0.2	0.6
V2VM	00	V	100	10	0	0	2.8	1.2	2.2
V2VM	12	V	100	15	0	0	2.6	0.2	1.5
V2XM	00	V	100	7	0	0	5.2	1.7	0.4
V2XM	12	V	100	8	0	12	5.2	-2.2	3.7
WTEC	00	V	100	6	0	0	5.2	-0.3	3.9
WTEC	12	V	100	10	0	0	5.2	-4.7	2.2
03953	00	V	100	23	0	0	5.0	0.2	-0.1
03953	12	V	100	28	0	0	2.8	-0.6	0.8
04018	00	V	100	20	0	0	2.8	0.0	0.0
04018	12	V	100	25	0	0	3.1	-1.0	1.0
04220	00	V	100	5	0	0	2.2	-3.0	-0.3
04220	12	V	100	3	0	0	2.2	-0.5	-0.3
04270	00	V	100	22	0	0	2.2	-1.8	0.4
04270	12	V	100	21	0	4	3.8	-2.5	0.6
04339	00	V	100	17	0	0	3.3	-0.3	-0.7
04339	12	V	100	23	0	0	4.2	-0.1	-0.4
04360	00	V	100	21	0	0	2.9	0.2	0.3
04360	12	V	100	25	0	0	1.8	-0.9	0.6
08001	00	V	100	20	0	0	8.2	0.1	-0.5
08001	12	V	100	16	0	0	2.6	-1.0	1.1
08508	00	V	100	7	0	0	3.4	-1.7	-0.6
08508	12	V	100	17	0	0	3.4	0.4	3.0
60020	00	V	100	4	0	0	8.0	-2.6	-3.4
60020	12	V	100	6	0	0	8.0	0.1	2.3
71600	00	V	100	25	0	0	3.7	0.1	-0.4
71600	12	V	100	28	0	0	2.0	0.1	0.2
72201	00	V	100	19	0	0	2.8	-1.5	-1.9
72201	12	V	100	18	0	0	6.1	-1.9	-0.3
72402	00	V	100	22	0	0	4.9	0.2	-0.9
72402	12	V	100	25	0	0	3.7	-1.1	-0.1
74494	00	V	100	21	0	0	2.8	-1.4	0.2
74494	12	V	100	23	0	0	2.0	-1.2	0.6
78016	00	V	100	1	0	0	7.4	-0.2	9.0
78016	12	V	100	17	0	0	7.4	-0.7	-0.1

TABLE 13

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: February, 1998

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from selected radiosonde TEMPs.

Area monitored :0°N - 90°N, 100°W - 40°E

Standard of comparison :Background field from Bracknell global model.

Position :Average latitude and longitude for period.

Observation times :00, 12 UTC.

Level monitored :500 hPa.

Element monitored :VECTOR WIND in m s^{-1}

Parameters monitored

:NUM OBS :Number of observations available at level shown during period.

:NUM GROSS :Number of gross errors at level shown during period.

:UBIAS,VBIAS: Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.

:RMS :Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
CGDX	00	V	500	1	0	0	0.0	-1.5	-1.4
DBBH	00	V	500	3	0	0	3.8	-3.5	-1.4
DBBH	12	V	500	11	0	0	3.8	-0.6	1.8
FATU	00	V	500	1	0	0	6.1	-0.7	-1.3
FATU	12	V	500	1	0	0	6.1	1.5	-3.2
FNOR	00	V	500	8	0	0	6.1	-1.0	2.0
FNOR	12	V	500	12	0	0	6.1	-0.4	-1.1
FNOU	00	V	500	9	0	0	4.1	-2.1	-0.8
FNOU	12	V	500	11	0	0	3.8	-0.6	0.7
FNPH	00	V	500	7	0	0	3.2	-0.4	-0.6
FNPH	12	V	500	7	0	0	3.2	1.1	-0.9
FNRS	00	V	500	12	0	0	3.2	-0.8	0.2
FNRS	12	V	500	10	0	0	4.1	-1.1	-1.0
JBOA	00	V	500	1	0	0	4.0	0.9	0.1
JCCX	00	V	500	1	0	0	4.0	-0.8	2.2
JGQH	00	V	500	1	0	0	4.0	0.6	0.7
LDWR	00	V	500	24	0	8	4.0	1.4	1.2
LDWR	12	V	500	27	0	0	6.2	3.2	-1.7
OVYA2	00	V	500	13	0	0	5.1	0.6	1.4
OVYA2	12	V	500	11	0	0	4.3	0.6	-1.4
OXTS2	00	V	500	11	0	0	4.0	0.8	0.5
OXTS2	12	V	500	10	0	0	4.9	1.4	1.4
SHIPBX	00	V	500	1	0	0	3.2	5.9	-2.0
V2VM	00	V	500	10	0	0	3.2	-1.6	-0.6
V2VM	12	V	500	18	0	0	4.2	-1.0	-0.4
V2XM	00	V	500	8	0	0	3.2	0.7	-0.6
V2XM	12	V	500	9	0	22	3.2	-2.7	4.3
WTEC	00	V	500	17	0	0	3.2	-0.9	1.3
WTEC	12	V	500	16	0	0	2.7	0.3	1.6
WTEU	00	V	500	2	0	50	4.4	-10.2	7.5
03953	00	V	500	26	0	0	3.1	2.0	-0.6
03953	12	V	500	28	0	0	3.9	-0.2	-0.1
04018	00	V	500	23	0	0	3.4	0.0	0.1
04018	12	V	500	27	0	0	3.5	-0.4	-1.0
04220	00	V	500	22	0	0	4.4	1.1	0.7
04220	12	V	500	24	0	0	5.9	0.5	0.4
04270	00	V	500	25	0	0	4.2	-0.3	-1.2
04270	12	V	500	28	0	0	4.6	0.4	-1.0
04339	00	V	500	18	0	0	5.4	-2.6	-1.2
04339	12	V	500	25	0	0	5.5	0.1	0.4
04360	00	V	500	21	0	0	4.2	-0.6	1.1
04360	12	V	500	26	0	0	5.0	0.0	2.0
08001	00	V	500	22	0	0	3.8	-1.3	-3.0
08001	12	V	500	26	0	0	4.3	-0.6	-1.7
08508	00	V	500	8	0	0	2.9	-0.4	1.3
08508	12	V	500	23	0	0	2.9	0.0	-0.4
60020	00	V	500	23	0	0	5.9	-1.4	-1.1
60020	12	V	500	26	0	0	4.5	-0.9	-1.4
71600	00	V	500	25	0	0	3.1	0.9	-0.6
71600	12	V	500	28	0	0	3.2	0.3	0.0
72201	00	V	500	24	0	0	4.3	-0.2	0.2
72201	12	V	500	25	0	0	4.3	-0.1	0.4
72402	00	V	500	23	0	0	5.0	0.3	0.8
72402	12	V	500	27	0	0	3.5	1.6	2.0
74494	00	V	500	25	0	0	2.8	0.5	0.8
74494	12	V	500	26	0	0	2.9	1.7	-0.2
78016	00	V	500	1	0	0	7.5	5.4	4.9
78016	12	V	500	19	0	0	7.5	0.4	-0.4

APPENDIX I

1. The gross error limits for observation minus background differences of geopotential height in Tables 5, 10 and 11 are:-

Level (hPa)	Geopotential height (metres)
1000	100
850	100
700	100
500	150
400	175
300	200
250	225
200	250
150	275
100	300
70	375
50	400
30	450

The weighted RMS values used in Table 5,10 and 11 are calculated using the following weights:-

Level (hPa)	Weight
1000	3.70
850	3.40
700	2.90
500	2.20
400	1.90
300	1.60
250	1.50
200	1.37
150	1.19
100	1.00
70	0.87
50	0.80
30	0.64

2. The gross error limits for observation minus background differences of windspeed in Tables 6,12 and 13 are:-

Level (hPa)	Windspeed m s^{-1}
1000	35
850	35
700	40
500	45
400	50
300	60
250	60
200	50
150	50
100	45